VOL. 31. AUGUST, 1882. No. 2.

The Pennsylvania School Journal

DEVOTED TO SCHOOL AND HOME

EDUCATION

E. E. HIGBEE, EDITOR.

CONTENTS.

The Voices of Nature and How We Hear Them: Wonders of Sound and Marvelous Mechanism of the Human Ear, . . *Arabella B. Buckley.* 43
Michigan Agricultural College: Its History and Plan of Organization, and the Satisfactory Results of Its Work, ... *A. W. Potter.* 50
President Dwight on Manners, ... *J. W. Phelps.* 54
"Forsan et Hæc Olim Meminisse Juvabit." *(Poem)* 56
Some Pedagogic Errors: Talking too Much—Making No Points—Detention for Study, ... *J. Dorman Steele.* 57
Something of Hobbies: A Teacher and his Pupils, . . *Charles M. Drake.* 58
Retrospection: "History is the Light of Truth," . . *Charles Perrine.* 61
William Penn, The Founder: No. III.—Preface to Frame of Government —Treaty with the Indians, etc., ... *R. K. Buehrle.* 62
Obituary: William Boyle, James T Leonard. 60
EDITORIAL DEPARTMENT.—State Association—Bi-Centennial—Normal Schools—Michigan Agricultural College—Examinations—The Saratoga Meetings: National Educational Association, American Institute, National Council of Education, Industrial Education, Elementary Schools, and other Departments, ... 70
Official Department.—Permanent Certificates Granted—Items from Reports, 76
Book Notices.—Leeds' Smaller History of United States, etc., . . . 77
Music.—"Home's Not Merely Four Square Walls," and "The Chapel," . 80

J. P. M. CASKEY,
LANCASTER, PA.

Price, $1.00 in Advance. Ten or more Copies, $1.35. Postage Free.

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THE
SCHOOL JOURNAL
ORGAN OF THE DEPARTMENT OF COMMON SCHOOLS AND OF THE STATE TEACHERS' ASSOCIATION.

Vol. 31. AUGUST, 1882. No. 2.

THE VOICES OF NATURE, AND HOW WE HEAR THEM.

FAIRY-LAND OF SCIENCE: NO. VI.

WE have reached to-day the middle point of our course, and here we will make a new start. All the wonderful histories which we have been studying in the last five lectures have had little or nothing to do with living creatures. The sunbeams would strike on our earth, the air would move restlessly to and fro, the water-drops would rise and fall, the valleys and ravines would still be cut out by rivers, if there were no such thing as life upon the earth. But without living things there could be none of the beauty which these changes bring about. Without plants, the sunbeams, the air, and the water would be quite unable to clothe the bare rocks, and without animals and man they could not produce light, or sound, or feeling of any kind.

In the next five lectures, however, we are going to learn something of the use living creatures make of the earth; and to-day we will begin by studying one of the ways in which *we* are affected by the changes of nature, and hear her voice.

We are all so accustomed to trust to our sight to guide us in most of our actions, and to think of things as we see them, that we often forget how very much we owe to *Sound*. And yet nature speaks to us so much by her gentle, her touching, or her awful sounds, that the life of a deaf person is even more hard to bear than that of a blind one.

Have you ever amused yourself with trying how many different sounds you can distinguish if you listen at an open window in a busy street? You will probably be able to recognize easily the jolting of the heavy wagon or dray, the rumble of the omnibus, the smooth roll of the private carriage and the rattle of the light butcher's cart; and even while you are listening for these, the crack of the carter's whip, the cry of the costermonger at his stall, and the voices of the passers-by will strike upon your ear. Then if you give still more close attention you will hear the doors open and shut along the street, the footsteps of the passengers, the scraping of the shovel of the mud-carts; nay, if he happen to stand near, you may even hear the jingling of the shoeblack's pence as he plays pitch and toss upon the pavement. If you think for a moment, does it not seem wonderful that you should hear all these sounds so that you can recognize each one distinctly while all the rest are going on around you?

But suppose you go into the quiet country. Surely there will be silence *there*. Try some day and prove it for yourself; lie down on the grass in a sheltered nook and listen attentively. If there be ever so little wind stirring you will hear it rustling gently through the trees; or even if there is not this, it will be strange if you do not hear some wandering gnat buzzing, or some busy bee humming as it moves from flower to flower. Then a grasshopper will set up a chirp within a few yards of you, or, if all

living creatures are silent, a brook not far off may be flowing along with a rippling, musical sound. These and a hundred other noises you will hear in the most quiet country spot; the lowing of cattle, the song of the birds, the squeak of the field-mouse, the croak of the frog, mingling with the sound of the woodman's axe in the distance, or the dash of some river torrent. And besides these quiet sounds, there are still other occasional voices of nature which speak to us from time to time. The howling of the tempestuous wind, the roaring of the sea-waves in a storm, the crash of thunder, and the mighty noise of the falling avalanche; such sounds as these tell us how great and terrible nature can be.

Now, has it ever occurred to you to think what Sound is, and how it is that we hear all these things? Strange as it may seem, if there were no creature that could hear upon the earth, there would be no such thing as Sound, though all these movements in nature were going on just as they are now.

Try and grasp this thoroughly, for it is difficult at first to make people believe it. Suppose you were stone-deaf, there would be no such thing as Sound to you. A heavy hammer falling on an anvil would indeed shake the air violently, but since this air when it reached your ear would find a useless instrument, it could not play upon it. *And it is this play on the drum of your ear and the nerves within it speaking to your brain which makes Sound.* Therefore, if all creatures on or around the earth were without ears or nerves of hearing, there would be no instruments on which to play, and consequently there would be no such thing as Sound. This proves that two things are needed in order that we may hear. First, the outside movement which plays on our hearing instrument; and, secondly, the hearing instrument itself.

First, then, let us try to understand what happens outside our ears. Take a poker and tie a piece of string to it, and holding the ends of the string to your ears, strike the poker against the fender. You will hear a very loud sound, for the blow will set all the particles of the poker quivering, and this movement will pass right along the string to the drum of your ear and play upon it.

Now take the string away from your ears, and hold it with your teeth. Stop your ears tight, and strike the poker once more against the fender. You will hear the sound quite as loudly and clearly as you did before, but this time the drum of your ear has not been agitated. How, then, has the sound been produced? In this case, the quivering movement has passed through your teeth into the bones of your head, and from them into the nerves, and so produced sound in your brain. And now, as a final experiment, fasten the string to the mantelpiece, and hit it again against the fender. How much feebler the sound is this time, and how much sooner it stops! Yet still it reaches you, for the movement has come this time across the air to the drum of your ear.

Here we are back again in the land of the invisible workers! We have all been listening and hearing ever since we were babies, but have we ever made any picture to ourselves of *how* sound comes to us right across a room or a field, when we stand at one end and the person who calls is at the other?

Since we have studied the "aërial ocean," we know that the air filling the space between us, though invisible, is something very real, and now all we have to do is to understand exactly how the movement crosses this air.

This we shall do most readily by means of an experiment made by Dr. Tyndall in his lectures on Sound. I have here a number of boxwood balls resting in a wooden tray which has a bell hung at the end of it. I am going to take the end ball and roll it sharply against the rest, and then I want you to notice carefully what happens. See! the ball at the other end has gone off and hit the bell, so that you hear it ring. Yet the other balls remain where they were before. Why is this? It is because each of the balls, as it was knocked forwards, had one in front of it to stop it and make it bound back again, but the last one was free to move on. When I threw this ball from my hand against the others, the one in front of it moved, and hitting the third ball, bounded back again; the third did the same to the fourth, the fourth to the fifth, and so on to the end of the line. Each ball thus came back to its place, but it passed the shock on to the last ball, and the ball to the bell. If I now put the balls close up to the bell, and repeat the experiment, you still hear the sound, for the last ball shakes the bell as if it were a ball in front of it.

Now imagine these balls to be atoms of air, and the bell your ear. If I clap my hands and so hit the air in front of them, each air-atom hits the next just as the balls did, and though it comes back to its place,

it passes the shock on along the whole line to the atom touching the drum of your ear, and so you receive a blow. But a curious thing happens in the air which you cannot notice in the balls. You must remember that air is elastic, as if there were springs between the atoms, so when any shock knocks the atoms forward, several of them can be crowded together before they push on those in front. Then, as soon as they have passed the shock on, they rebound and begin to separate again, and so swing to and fro till they come to rest. Meanwhile the second set will go through just the same movements, and will spring apart as soon as they have passed the shock on to a third set, and so you will have one set of crowded atoms and one set of separated atoms alternately all along the line, and the same set will never be crowded two instants together.

You may see an excellent example of this in a luggage train in a railway station, when the trucks are left to bump each other till they stop. You will see three or four trucks knock together, then they will pass the shock on to the four in front, while they themselves bound back and separate as far as their couplings will let them; the next four trucks will do the same, and so a kind of wave of crowded trucks passes on to the end of the train, and they bump to and fro till the whole comes to a standstill. Try to imagine a movement like this going on in the line of air-atoms, the drum of your ear being at the end of the line. Those which are crowded together at that end will hit on the drum of your ear and drive the membrane which covers it inwards; then instantly the wave will change, these atoms will bound back, and the membrane will recover itself again, but only to receive a second blow as the atoms are driven forwards again, and so the membrane will be driven in and out till the air has settled down.

This you see is quite different from the waves of light which move in crests and hollows. Indeed, it is not what we usually understand by a wave at all, but a set of crowdings and partings of the atoms of air which follow each other rapidly across the air. A crowding of atoms is called a *condensation*, and a parting is called a *rarefaction*, and when we speak of the length of a wave of sound, we mean the distance between two condensations or between two rarefactions.

Although each atom of air moves a very little way forwards and then back, yet, as a long row of atoms may be crowded together before they begin to part, a wave is often very long. When a man talks in an ordinary bass voice, he makes sound-waves from 8 to 12 feet long; a woman's voice makes shorter waves, from 2 to 4 feet long, and consequently the tone is higher, as we shall presently explain.

And now I hope that some one is anxious to ask why, when I clap my hands, any one behind me or at the side can hear it as well or nearly as well as you who are in front. This is because I give a shock to the air all round my hands, and waves go out on all sides, making as it were globes of crowdings and partings widening and widening away from the clap as circles widen on a pond. Thus the waves travel behind me, above me, and on all sides, until they hit the walls, the ceiling, and the floor of the room, and wherever you happen to be, they hit upon your ear.

If you can picture to yourself these waves spreading out in all directions, you will easily see why Sound grows fainter at the distance. Just close round my hands when I clap them, there is a small quantity of air, and so the shock I give it is very violent, but as the sound-waves spread on all sides they have more and more air to move, and so the air-atoms are shaken less violently and strike with less force on your ear.

If we can prevent the sound-wave from spreading, then the sound is not weakened. The Frenchman Biot found that a low whisper could be heard distinctly for a distance of half a mile through a tube, because the waves could not spread beyond the small column of air. But unless you speak into a small space of some kind, you cannot prevent the waves going out from you in all directions.

Try to imagine that you see these waves spreading all around me now and hitting on your ears as they pass, then on the ears of those behind you, and on and on in widening globes till they reach the wall. What will happen when they get there? If the wall were thin, as a wooden partition is, they would shake it, and it again would shake the air on the other side, and so any one in the next room would have the sound of my voice brought to their ear.

But something more will happen. In any case the sound-waves hitting against the wall will bound back from it just as a ball bounds back when thrown against anything, and so another set of sound-waves reflected from the wall will come back

across the room. If these waves come to your ear so quickly that they mix with direct waves, they help to make the sound louder. For instance, if I say "Ha," you hear that sound louder in this room than you would in the open air, for the "Ha" from my mouth and a second "Ha" from the wall come to your ear so instantaneously that they make one sound. This is why you can often hear better at the far end of the church when you stand against a screen or a wall, than when you are halfway up the building nearer to the speaker, because near the wall the reflected waves strike strongly on your ear and make the sound louder.

Sometimes, when the sound comes from a great explosion, these reflected waves are so strong that they are able to break glass. In the explosion of gunpowder in St. John's Wood, many houses in the back streets had their windows broken, for the sound-waves bounded off at angles from the walls and struck back upon them.

Now, suppose the wall were so far behind you that the reflected sound-waves only hit upon your ear after those coming straight from me had died away; then you would hear the sound twice, "Ha" from me and "Ha" from the wall, and here you have an echo, "Ha, ha." In order for this to happen in ordinary air, you must be standing at least 56 feet away from the point from which the waves are reflected, for then the second blow will come one-tenth of a second after the first one, and that is long enough for you to feel them separately.* Miss C. A. Martineau tells a story of a dog which was terribly frightened by an echo. Thinking another dog was barking, he ran forward to meet him, and was very much astonished when, as he came nearer the wall, the echo ceased. I myself once knew a case of this kind, and my dog, when he could find no enemy, ran back barking, till he was a certain distance off, and then the echo of course began again. He grew so furious at last that we had great difficulty in preventing him from flying at a strange man who happened to be passing at the time.

Sometimes, in the mountains, walls of rock rise at some distance one behind another, and then each one will send back its echo a little later than the rock before it, so that the "Ha" which you give will come back as a peal of laughter. There is an echo in Woodstock Park which repeats the word twenty times. Again sometimes, as in the Alps, the sound-waves in coming back rebound from mountain to mountain and are driven backwards and forwards, becoming fainter and fainter till they die away; these echoes are very beautiful.

If you are now able to picture to yourselves one set of waves going to the wall, and another set returning and crossing them, you will be ready to understand something of that very difficult question, How is it that we can hear many different sounds at one time and tell them apart?

Have you ever watched the sea when its surface is much ruffled, and noticed how, besides the big waves of the tide, there are numberless smaller ripples made by the wind blowing the surface of the water, or the oars of a boat dipping in it, or even rain-drops falling? If you have done this you will have seen that all these waves and ripples cross each other, and you can follow any one ripple with your eye as it goes on its way undisturbed by the rest. Or you may make beautiful crossing and recrossing ripples on a pond by throwing in two stones at a little distance from each other, and here too you can follow any one wave on to the edge of the pond.

Now just in this way the waves of sound, in their manner of moving, cross and recross each other. You will remember too, that different sounds make waves of different lengths, just as the tide makes a long wave and the rain-drops tiny ones. Therefore each sound falls with its own peculiar wave upon your ear, and you can listen to that particular wave just as you look at one particular ripple, and then the sound becomes clear to you.

All this is what is going on outside your ear, but what is happening in your ear itself? How do these blows of the air speak to your brain?

First, I want you to notice how beautifully the outside shell of the ear, or *concha* as it is called, is curved round so that any movement of the air coming to it from the front is caught in it and reflected into the hole of the ear. Put your finger round your ear and feel how the gristly part is curved towards the front of your head. This concha makes a curve much like the curve a deaf man makes with his hand behind his ear to catch the sound. Animals often have to raise their ears to catch the

*Sound travels 1120 feet in a second, in air of ordinary temperature, and therefore 112 feet in the tenth of a second. Therefore the journey of 56 feet beyond you to reach the wall and 56 feet to return, will occupy the sound-wave one-tenth of a second, and separate the two sounds.

sound well, but ours stand always ready. When the air-waves have passed in at the hole of your ear, they move all the air in the passage, which is called the auditory, or hearing, canal. This canal is lined with little hairs to keep out insects and dust, and the wax which collects in it serves the same purpose. But if too much wax collects, it prevents the air from playing well upon the drum, and therefore makes you deaf. Across the end of this canal a membrane or skin called the *tympanum* is stretched, like the parchment over the head of a drum, and it is this membrane which moves to and fro as the air-waves strike on it. A violent blow on the ear will sometimes break this delicate membrane, or injure it, and therefore it is very wrong to hit a person violently on the ear.

On the other side of this membrane, *inside* the ear, there is air, which fills the whole of the inner chamber and the tube which runs down into the throat behind the nose, and is called the Eustachian tube after the man who discovered it. This tube is closed at the end by a valve which opens and shuts. If you breathe out strongly, and then shut your mouth and swallow, you will hear a little "click" in your ear. This is because in swallowing you draw the air out of the Eustachian tube, and so draw in the membrane, which clicks as it goes back again. But unless you do this the tube and the whole chamber cavity behind the membrane remain full of air.

Now, as this membrane is driven to and fro by the sound-waves, it naturally shakes the air in the cavity behind it, and it also sets moving three most curious little bones. The first of these bones is fastened to the middle of the drumhead so that it moves to and fro every time this membrane quivers. The head of this bone fits into a hole in the next bone, the anvil, and is fastened to it by muscles, so as to drag it along with it; but, the muscles being elastic, it can draw back a little from the anvil, and so give it a blow each time it comes back. This anvil is in its turn very firmly fixed to the little bone shaped like a stirrup at the end of the chain.

This stirrup rests upon a curious body, which looks like a snail-shell with tubes coming out of it. This body, which is called the *labyrinth*, is made of bone, but it has two little windows in it, one covered only by a membrane, while the other has the head of the stirrup resting upon it.

Now, with a little attention, you will understand that when the air in the auditory canal shakes the drumhead to and fro, this membrane must drag with it the hammer, the anvil, and the stirrup. Each time the drum goes in, the hammer will hit the anvil, and drive the stirrup against the little window; every time it goes out it will draw the hammer, the anvil, and the stirrup out again, ready for another blow. Thus the stirrup is always playing upon this little window. Meanwhile, inside the bony labyrinth there is a fluid like water, and along the little passages are very fine hairs, which wave to and fro like reeds; and whenever the stirrup hits at the little window, the fluid moves these hairs to and fro, and they irritate the ends of a nerve, and this nerve carries the message to your brain. There are also some curious little stones called otoliths, lying in some parts of this fluid, and they, by their rolling to and fro, probably keep up the motion and prolong the sound.

You must not imagine we have explained here the many intricacies which occur in the ear. I can only hope to give you a rough idea of it, so that you may picture to yourselves the air-waves moving backwards and forward in the canal of your ear, then the tympanum vibrating to and fro, the hammer hitting the anvil, the stirrup knocking at the little window, the fluid waving the fine hairs and rolling the tiny stones, the ends of the nerve quivering, and then (*how* we know not) the brain hearing the message.

Is not this wonderful, going on as it does at every sound you hear? And yet this is not all, for inside that curled part of the labyrinth, which looks like a snail-shell and is called the *cochlea*, there is a most wonderful apparatus of more than three thousand fine stretched filaments or threads, and these act like the strings of a harp, and make you hear different tones. If you go near to a harp or a piano, and sing any particular note very loudly, you will hear this note sounding in the instrument, because you will set just that particular string quivering, which gives the note you sang. The air-waves set going by your voice touch that string, because it can quiver in time with them, while none of the other strings can do so. Now, just in the same way the tiny instrument of three thousand strings in your ear, which is called Corti's organ, vibrates to the air-waves, one thread to one set of waves, another to another, and according to the fibre that quivers, will be the sound you hear. Here then at last,

we see how nature speaks to us. All the movements going on outside, however violent and varied they may be, cannot of themselves make sound. But here, in the little space behind the drum of our ear, the air-waves are sorted and sent on to our brain, where they speak to us as sound.

But why, then, do we not hear all sounds as music? Why are some mere noise, and others clear musical notes? This depends entirely upon whether the sound-waves come quickly and regularly, or by an irregular succession of shocks. For example, when a load of stones is being shot out of a cart, you hear only a long, continuous noise, because the stones fall irregularly, some quicker, some slower, here a number together, and there two or three stragglers by themselves; each of these different shocks comes to your ear and makes a confused, noisy sound. But if you run a stick very quickly along a paling, you will hear a sound very like a musical note. This is because the rods of the paling are all at equal distances one from the other, and so the shocks fall quickly one after another at regular intervals upon your ear. Any quick and *regular* succession of sounds makes a note, even though it may be a disagreeable one. The squeak of a slate pencil along a slate, and the shriek of a railway whistle are not pleasant, but they are real notes which you could copy on a violin.

I have here a simple apparatus which I have had made to show you that rapid and regular shocks produce a natural musical note. This wheel is milled at the edge like a shilling, and when I turn it rapidly so that it strikes against the edge of the card fixed behind it, the notches strike in rapid succession, and produce a musical sound. We can also prove by this experiment that the quicker the blows are, the higher the note will be. I pull the string gently at first, and then quicker and quicker, and you will notice that the note grows sharper and sharper, till the movement begins to slacken, when the note goes down again. This is because the more rapidly the air is hit, the shorter are the waves it makes, and short waves give a high note.

Let us examine this with two tuning-forks. I strike one, and it sounds C, the third space in the treble; I strike the other, and it sounds A, the first leger line, five notes above the C. I have drawn on this diagram an imaginary picture of these two sets of waves. You see that the A fork makes three waves, while the C fork makes only two. Why is this? Because the prong of the A fork moves three times backwards and forwards while the prong of the C fork moves only twice; therefore the A fork does not crowd so many atoms together before it draws back, and the waves are shorter. These two notes, C and A, are a fifth of an octave part; if we had two forks, of which one went twice as fast as the other, making four waves while the other made two, then that note would be an octave higher.

So we see that all the sounds we hear—the warning noises which keep us from harm, the beautiful musical notes with all the tunes and harmonies that delight us, even the power of hearing the voices of those we love, and learning from one another that which each can tell—all these depend upon the invisible waves of air, even as the pleasures of light depend on the waves of ether. It is by these sound-waves that nature speaks to us, and in all her movements there is a reason why her voice is sharp or tender, loud or gentle, awful or loving. Take for instance the brook we spoke of at the beginning of the lecture. Why does it sing so sweetly, while the wide, deep river makes no noise? Because the little brook eddies and purls round the stones, hitting them as it passes; sometimes the water falls down a large stone, and strikes against the water below, or sometimes it grates the little pebbles together as they lie in its bed. Each of these blows makes a small globe of sound-waves, which spread and spread till they fall on your ear, and because they fall quickly and regularly, they make a low, musical note. We might almost fancy that the brook wished to show how joyfully it flows along, recalling Shelley's beautiful lines:

> "Sometimes it fell
> Among the moss with hollow harmony,
> Dark and profound; now on the polished stones
> It danced; like childhood laughing as it went."

The broad, deep river, on the contrary, makes none of these cascades and commotions. The only places against which it rubs are the banks and the bottom; and here you can sometimes hear it grating the particles of sand against each other, if you listen very carefully. But there is another reason why falling water makes a sound, and often even a loud roaring noise in the cataract and in the breaking waves of the sea. You do not only hear the water dashing aginst the rocky ledges or on the beach, you also hear the bursting of innumerable little bladders of air which are contained in the water. As each of these bladders is

dashed on the ground, it explodes and sends sound-waves to your ear. Listen to the sea some day when the waves are high and stormy, and you cannot fail to be struck by the irregular bursts of sound.

The waves, however, do not only roar as they dash on the ground; have you never noticed how they seem to scream as they draw back down the beach? The English poet Tennyson calls it,

> "The scream of the madden'd beach dragged down by the wave;"

and it is caused by the stones grating against each other as the waves drag them down. Dr. Tyndall tells us that it is possible to know the size of the stones by the kind of noise they make. If they are large, it is a confused noise; when smaller, a kind of scream; while a gravelly beach will produce a mere hiss.

Who could be dull by the side of a brook, a water-fall, or the sea, while he can listen for sounds like these, and picture to himself how they are being made? You may discover a number of other causes of sound made by water, if you once pay attention to them.

Nor is it only water that sings to us. Listen to the wind, how sweetly it sighs among the leaves! There we hear it, because it rubs the leaves together, and they produce the sound-waves. But walk against the wind some day, and you can hear it whistling in your own ear, striking against the curved cup, and then setting up a succession of waves in the hearing canal of the ear itself.

Why should it sound in one particular tone when all kinds of sound-waves must be surging about in the disturbed air?

This glass jar will answer our question roughly. If I strike my tuning-fork and hold it over the jar, you cannot hear it, because the sound is feeble; but if I fill the jar gently with water, when the water rises to a certain point you will hear a loud, clear note, because the waves of air in the jar are exactly the right length to answer to the note of the fork. If I now blow across the mouth of the jar you hear the same note, showing that a cavity of a particular length will only sound to the waves which fit it. Do you see now the reason why Pan-pipes give different sounds, or even the hole at the end of a common key when you blow across it? Here is a subject you will find very interesting if you will read about it, for I can only just suggest it to you here. But now you will see that the canal of your ear also answers only to certain waves, and so the wind sings in your ear with a real, if not a musical, note.

Again, on a windy night have you not heard the wind sounding a wild, sad note down a valley? Why do you think it sounds so much louder and more musical here than when it is blowing across the plain? Because the air in the valley will only answer to a certain set of waves, and, like the Pan-pipe, gives a particular note as the wind blows across it, and these waves go up and down the valley in regular pulses, making a wild howl. You may hear the same in the chimney, or in the keyhole; all these are waves set up in the hole across which the wind blows. Even the music in the shell which you hold to your ear is made by the air in the shell pulsating to and fro. And how do you think it is set going? By the throbbing of the veins in your own ear, which causes the air in the shell to vibrate.

Another grand voice of nature is the thunder. People often have a vague idea that thunder is produced by the clouds knocking together, which is very absurd, if you remember that clouds are but water-dust. The most probable explanation of thunder is much more beautiful than this. You will remember from Lecture III that heat forces the air-atoms apart. Now, when a flash of lightning crosses the sky, it suddenly expands the air all round it as it passes, so that globe after globe of sound-waves is formed at every point across which the lightning travels. Now light, you remember, travels so wonderfully rapidly (192,000 miles in a second) that a flash of lightning is seen by us and is over in a second, even when it is two or three miles long. But sound comes slowly, taking five seconds to travel half a mile, and so all the sound-waves at each point of the two or three miles fall on our ear one after the other, and make the rolling thunder. Sometimes the roll is made even longer by the echo, as the sound-waves are reflected to and fro by the clouds on their way; and in the mountains we know how the peals echo and re-echo till they die away.

We might fill up far more than an hour in speaking of those voices which come to us as nature is at work. Think of the patter of the rain, how each drop as it hits the pavement sends circles of sound-waves out on all sides; or the loud report which falls on the ear of the Alpine traveler as the glacier cracks on its way down the valley; or the mighty boom of the avalanche as the

snow slides in huge masses off the side of the lofty mountain. Each and all of these create their sound-waves, large or small, loud or feeble, which make their way to your ear, and become converted into sound.

We have, however, only time now just to glance at life-sounds, of which there are so many around us. Do you know why we hear a buzzing, as the gnat, the bee, or the cockchafer fly past? Not by the beating of their wings against the air, as many people imagine, and as is really the case with humming birds, but by the scraping of the under-part of their hard wings against the edges of their hand-legs, which are toothed like a saw. The more rapidly their wings move the stronger the grating sound becomes, and you will now see why in hot, thirsty weather the buzzing of the gnat is so loud, for the more thirsty and the more eager he becomes, the wilder his movements will be.

Some insects, like the drone-fly (*Eristalis tenax*), force the air through the tiny air-passages in their sides, and as these passages are closed by little plates, the plates vibrate to and fro and make sound-waves. Again, what are those curious sounds you may hear sometimes if you rest your head on a trunk in the forest? They are made by the timber-boring beetles, which saw the wood with their jaws and make a noise in tne world, even though they have no voice.

All these life-sounds are made by creatures which do not sing or speak; but the sweetest sounds of all in the woods are the voices of the birds. All voice-sounds are made by two elastic bands or cushions, called vocal chords, stretched across the end of the tube or windpipe through which we breathe, and as we send the air through them we tighten or loosen them as we will, and so make them vibrate quickly or slowly and make sound-waves of different lengths. But if you will try some day in the woods you will find that a bird can surpass you over and over again in the length of his note; when you are out of breath and forced to stop he will go on with his merry trill as fresh and clear as if he had only just begun. This is because birds can draw air into the whole of their body, and they have a large stock laid up in the folds of their windpipe, and besides this the air-chamber behind their elastic bands or vocal chords has two compartments where we have only one, and the second compartment has special muscles by which they can open and shut it, and so prolong the trill.

Only think what a rapid succession of waves must quiver through the air as a tiny lark agitates his little throat and pours forth a volume of song! The next time you are in the country in the spring, spend half an hour listening to him, and try and picture to yourself how that little being is moving all the atmosphere round him. Then dream for a little while about Sound, what it is, how marvelously it works outside in the world, and inside in your ear and brain; and then, when you go back to work again, you will hardly deny that it is well worth while to listen sometimes to the Voices of Nature and ponder how it is that we hear them.

THE MICHIGAN AGRICULTURAL COLLEGE.

PROF. A. W. POTTER.

WITH no class of people have the conditions of life and labor so changed in the last fifty years as with the farmer. To advance as he should, or even to maintain his old position, the agriculturist of to-day must receive a far better education than he of two generations ago. There is a growing tendency in this country to so modify popular education by the introduction of the natural sciences as to meet the demands of this age of manufactures and skilled labor, and raise the industrial pursuits to the level of the higher and more liberal professions. Forty years ago, the educational tendency was altogether literary, "for the head, not hands," and the farmer boy who was sent to college, was lost to the farm. Educated labor is not only the best, but the cheapest, as well on the farm as elsewhere. And as the business of the farmer is a much more complicated process than that of any artisan, so, for its successful practice, it demands a more liberal education, a knowledge of principles and causes, keen insight, and a sound judgment. Without this mental discipline, the farmer works blindfold with nature's forces, and his conclusions from surrounding phenomena, are drawn slowly from "trial and error," and not at once by a knowledge of principles. His work becomes drudgery, his profits less. To keep abreast with the times, in a country where nearly two-thirds of the people are farmers, the need of scientific knowledge is imperative. The American who would engage in a successful pursuit of agriculture, must be familiar with chemistry, botany, and entomology, to insure immediate and satisfactory results. "'Only, a farmers,' expresses with all-sufficient accuracy the relative position of farmers—not their necessary, but their actual position. The occupation which should be a liberal profession is a most illiberal labor." Education only can raise the social and political standing of farmers and secure them proper consideration and respect, and any school system that makes no provision

for technical instruction in the industries of life is incomplete. Eighty years ago, there was not an agricultural college in the world; now there are thirty-nine in our own country alone.

As much a part of the State educational system as either the University or high schools, is the Michigan Agricultural College. The pioneer in its organization in this country, it has had its own experience as its best and only teacher; and is the model after which many similar colleges in other states have been formed. Its objects, as set forth in the catalogue, are—

1. To impart a knowledge of the sciences and their application to the arts of life. Those sciences which relate especially to agriculture and kindred arts, such as chemistry, botany, geology, and animal physiology, are presented to a much greater extent than in institutions where their practical application is not pursued.

2. To afford to its students *the benefits of daily manual labor*, which labor is paid for.

3. To prosecute experiments for the promotion of agriculture and horticulture.

4. To afford instruction in other industries (when adequate means are secured) as the organic law of the College, and the Congressional act devoting the land for such colleges, contemplated, "for the benefit of agriculture and the mechanical arts."

5. To afford means of a general education to the farming class.

In 1850, the Michigan Legislature passed an act to establish an agricultural school as "soon as practicable," which was done five years afterward. By the provisions of the bill, the college was to be located within ten miles of the State capital, and twenty-two sections of the salt spring lands* were appropriated for the purpose. The maximum price per acre for the farm was to be $15. This limit prevented the buying committee from securing the best location, but a farm of six hundred and seventy-six acres was obtained, three and one-half miles east of Lansing. The farm was entirely new, nearly all being wood-land, and the first buildings went up amid huge stumps and forest trees.

The aggregate sum from the sale of the salt spring lands ($56,000) together with $40,000 from the State Treasury, furnished means for the purchase of the farm and the erection of the necessary buildings. But it formed no endowment, and the running expenses of the college could only be met by annual legislative appropriations. In this emergency Congress was appealed to, and in 1858, the two houses passed a bill granting twenty-five thousand acres of land to each member of Congress, for the support of agricultural schools, but it was vetoed by President Buchanan. Four years afterwards, a similar bill granting thirty thousand acres to each member of Congress, as an endowment for agricultural schools, was passed by Congress and signed by the President. This gave to Michigan 240,000 acres of land, of which the minimum price of sale was fixed at $3 per acre. About one-third of these lands has been sold, and the income at 7 per cent. is nearly $20,000. It is computed that when these lands are all sold, the income obtained will be $75,000; then will be realized the object of its foundation—technical instruction in the mechanical arts, and domestic economy.

In 1861, the charge of the college was transferred from the State Board of Education, to that of Agriculture. At the head of the board stands the venerable Judge Wells, presiding judge of the celebrated Court of Commissioners of the Alabama Claims. He has been a member of the board for twenty-one years, and represents the College on state occasions.

The College has been extremely fortunate in her faculty. Since 1857, the date of her opening, but two presidents have been in office. The present incumbent, Dr. T. C. Abbot, has been at the head of the institution since 1863. The faculty labor earnestly for the advancement of the college, and not for their own aggrandizement; and as a faculty, it is remarkably free from internal contentions. The first graduates left its halls in 1861, and in 1882, the alumni numbered two hundred and forty-four. *Over fifty per cent. of these graduates have become farmers.* This large per cent. of farmer graduates is no doubt due to several causes:

1st. Through effective courses in which a love for agriculture and kindred pursuits is instilled. 2d. The system of manual labor. 3d. The fact that classical studies are excluded from the college curriculum. It is a fact becoming yearly more established that in mixed schools of agriculture and the classics, the former course fails to keep its students. The dignity of labor is destroyed. The classical student looks down upon his working brother, and frequently such influences are brought to bear that the agricultural student deserts to the classics.

In the Universities of Minnesota, Wisconsin, and at Yale and Cornell, where an agricultural course is offered, the students in this department comprise a very small class, compared with those in other courses. Less than one and one-half per cent. of all the different college graduates ever become farmers.

The farm contains 676 acres, 190 of which are plowed, 100 pasture, 300 wood land, and 80 campus. The soil varies from a sandy loam, to clay and alluvial deposit. There are ten miles of drain pipes on the farm, covering the cultivated lots like a net work; and most of the labor connected with their construction was performed by students. Many acres of swamp lands have thus been reclaimed and made highly productive. Years of labor and large sums of money have been necessary to bring the value of the farm up from its buying price of $15 to its present worth of $200 per acre. The total valuation of building grounds, etc., is estimated to be now more than $300,000. The general farm is divided into lots of about twenty-three acres each, which are used for experiments, pasture, and rotation of crops. The campus contains large, well-kept lawns, beautiful drives, and handsome flower-beds, and the school buildings, seven cottages for the pro-

* The name given to those public domains in the State which were supposed to be rich in saline deposits.

fessors, green-houses, barns, work-houses, etc. The college buildings are a large recitation hall, boarding hall with society rooms, etc., Wells's Hall, filled with dormitories, and an armory in the basement, library and museum building, botanical laboratory and museum, and chemical laboratory. These buildings are generally ample in size, and neat in architecture. The school year is divided into three terms of twelve weeks each, which are so arranged that the long vacation of twelve weeks comes in mid-winter, and the summer term ends in August. This gives the best time of the year to teaching farming, and also enables the students to teach a three months' school in the winter.

The requirements for admission are fifteen years of age, and a thorough knowledge of common school studies. But one general course is offered, whose object is to put students in the way of becoming good farmers. To complete this course requires four years of study and practice, and the student has the opportunity of obtaining a thorough knowledge of agriculture, horticulture, landscape gardening, zoölogy, botany, entomology, with a greater or less amount of applied mathematics, mental science, geology, and literature. Essays, declamations, public orations, form a feature of the entire course. The forenoons are devoted to study and recitations; the afternoons to manual labor. There is probably nothing which has had a more salutary effect upon the efficiency and reputation of the college, than its system of *combined education and labor*. It has been found to be the only way to return students to the farms, in any number. Pres. Abbot says: "I think I see in the retaining of habits of daily manual labor, in the interest which studies and labor may be made to shed upon each other the beginning of the remedy for this abandonment of the farm by young educated men * * * * Man is a creature of habit, and the customs of the world are against receiving an education and then farming." The college has need to withstand this tendency, and one of its most effective means is its labor system. All students are required to labor three hours daily for five days in the week, except when excused on account of physical disability. The regular hours for work are from 1 p. m. to 4 p. m., except on Saturdays, when work is only furnished at request. As a matter of fact, five-sixths of the students do request it.

For this manual labor, the student is paid from 8 cents per hour, downwards, according to his working disposition. If he absent himself from work without excuse, he forfeits one hour for each hour thus absent, as penalty. In the agricultural department for 1880, the highest price paid was 8 cents per hour, and the lowest 7 cents. In the department of horticulture, the highest 8 cents, the lowest 3 cents. From the very nature of the case, such a system cannot return much pecuniary profit. But anything pays that is not too costly as a means of illustration, they say. The sophomores spend the year on the farm, the juniors on the garden and grounds. The remaining years are spent in various duties in various departments. The classes are divided into gangs of ten or less, each of which is under the direct charge of a senior, who in turn is subject to the direction of the superintendent of the department. All kinds of work are thus performed—fencing, draining, logging, tending stock, shearing sheep, making garden, mending tools, etc., etc. At 12:45 p. m., the students assemble at the superintendent's office, where they are assigned to duty. The tools are kept in numbered places, to which places they must be returned, nicely cleaned, after use. The students as a class work well; but to arrange work so that for three consecutive hours a body of over two hundred workers may be kept busy, and to finish up necessary tasks left uncompleted by the student at 4 p. m. (at which time precisely, many feel it their bounden duty to stop), demands the most careful attention, and requires an extra force of paid laborers. In 1880, $2,593 were paid for student labor in the department of agriculture and horticulture. By extra work at college, and teaching a three months' school in the winter, many students meet the entire expenses of their college life.

A steward is paid by the state to take charge and furnish board at actual cost. All expenses of keeping up dining hall, and lighting dormitories, etc., are charged in the board bill. The average price for the spring term of 1881, was $2.38, and for the same in 1882, $3.15. Besides this, the student pays $3.50 per term for room rent and heating, and $2.25 for incidentals. This makes a sum total of $125 per college year, not counting books, etc. If the student has worked his fifteen hours a week, about $45 is deducted from this amount.

The stock department contains some fine bovine specimens. The law requires that at least five different breeds of full blooded animals be kept on the farm. Shorthorns, Devons, Holsteins, Ayrshires, Jerseys, Herefords and Galloways are now represented. The most valuable cows are two $1000 Duchess cows, and several $500 cows of different breeds. A $500 Hereford cow took several State Fair "*1st premiums*," in the East. A Shorthorn bull tips the beam at 2,300 lbs., as his regular weight. The sheep number about 150 of Southdowns, Spanish Merinos, and Cotswolds. The piggery contains many specimens of Berkshire, Poland China, Jersey Red, Suffolk and Essex. The college is required by law to exhibit at the annual State fair, at least five breeds of full-blooded stock, which are not allowed to compete for prizes. The awarding committee indicate their opinion of them by tying red (1st premium) and blue (2d premium) ribbons to many of these animals. At least two-thirds of this exhibit receive this mark of distinction.

A large green-house contains 10,000 plants of 1500 species, numbering some rare and beautiful specimens. By transplanting to beds in the summer, the campus forms one of the handsomest grounds in the state. A small ravine, part natural, part artificial, in the campus, contains over 600 species of indigenous wild plants. These are separated into beds according to species, by stone borders, and each bed plainly

marked. A small island, in the middle of an artificial pond, keeps the poisonous plants from the too curious. Shade trees and seats are at hand, and in summer it is one of the most frequented parts of the campus. Over 300 varieties of trees and shrubs are distributed over the campus and in the arboretum. Each specimen is labeled with both the English and the scientific name. There are also large orchards of apples and cherries, thirty-one varieties of pears, seven of plumbs, etc. The vineyard has sixty-eight marked varieties; and the strawberry beds contain sixty different kinds, and three hundred seedlings. Two hundred and eighty kinds of grasses are kept in small plats, properly marked, to show the principal varieties that grow here.

At the head of the Botanical Department is Dr. Beal, a pupil of Gray, and also of Agassiz. He adopts the golden mean of the tell-nothing of the latter, and tell-anything of the former. With him, books are for the reviews. Nature is the first teacher. Topics are assigned the students for investigation, and a general discussion of what has been seen or what might have been seen, takes place the following day, and a new line of investigation is then pointed out. In this way the student learns the art of all art—that of observing. He notices the plant's habits at different hours of the day, studies its motions, flowering, etc. Theses are prepared on the results of such investigations, which are kept bound by the College for future reference. Some of these results have received flattering notices from distinguished scientists. Dr. Asa Gray expressed himself as much pleased with the work, and desired that it might be carefully continued. A card exhibition of part of this kind of work, received two prizes at the State Fair.

The following are some of the topics assigned for original work:

How do insects behave on a certain species of plants, and what kinds of insects visit plants?

How do certain plants twine or climb?

What is the regular order and development of the stamens and pistils of many plants of Indian corn, and how many days do they vary?

The fertilization of plants by birds, insects, wind, and other means.

For what do ants visit plants, and how do they behave?

The farm is an experimental one. Some writers claim that an agricultural college cannot experiment without detriment to its own success, and to the education of the student. In an address before the State Legislature in 1875, President Abbott says: "A deadening influence would fall on faculty and students if we had no experiments. None are qualified for the high office of instructor in science, who are not in spirit investigators also. * * * An acute observer of the experiment stations in Germany, seems to put the enthusiasm the stations awaken as not the least of their good influence. Students catch the spirit of their masters and carry it through life."

Extended experiments are constantly being made in the agricultural, horticultural, and chemical departments. The results of many of these experiments, and the character of the men who made them, have done much toward establishing the reputation of the College. These experiments* have been conducted not with the view of proving any stated theory, but to obtain facts. Not only have the people of this State been benefited by this scientific research, but the people of the whole world. The able scientific writer, Prof. Harris, said of this College; "The Michigan Agricultural College now stands at the head of all similar institutions in this country. It is an honor to the State and to the country at large. * * * We all hold Michigan in high honor for what she has done for agricultural science. The experiments on the College farm are becoming more and more interesting the longer they are continued."

In a single experiment, the College saved more to the people than ever it has cost them. A few years ago, Clawson wheat was classed by the Detroit Board of Trade and millers generally as "No. 3 red." This decision reduced the market value of the cereal, and made it at much less profitable crop. Farmers received sorrowfully this decree, as the wheat was a heavy producer and a general favorite. Finally an appeal was made to the College to make an investigation. Nearly all of the winter vacation of twelve weeks, was spent by Dr. Kedzie and his assistant in making seventy-seven different

* The following is a list of a few of the important experiments made at the College:

1. Examination as to temperature of sprouting and purity of garden seeds from different prominent seed growers. The seeds were obtained through friends in different parts of the country, without the knowledge of the dealers. These results were published, and did much to improve the quality of the seed offered for sale. In fact, it closed up the business of some growers.

2. Examination as to resprouting of seed, after starting and drying.

3. Examination with weevil-eaten peas.

4. Growing beans in different soils, with more or less light.

5. Cultivation and improvement of corn, beans, tomatoes, etc.

6. Examination in foreign fertilization of plants. Crossing of corn from strong to weak stalks, and *vice versa*.

7. Grafting pot atoes on to tomatoes. Artichokes on to sunflowers.

8. Examination as to source of nitrogen of plants.

9. Examination of grasses on different kinds of soil, and different amounts of moisture, and feeding qualities.

10. Crossing of wheat. Crossing of corn. Some of the new varieties of wheat are obtained by a systematic effort of the botanist who crosses one variety with another. The operation is exceedingly delicate, and is performed just before the anthers are ready to shed their pollen, by fertilizing with the pollen of another variety, and afterward excluding all pollen of its own. Each seed from a head thus fertilized will produce a different variety of wheat, and the year after, each of the kernels will produce heads unlike each other. The grower now selects the type desired, and after a few years, the variety will reproduce itself with much certainty, and the type becomes fixed.

analyses of wheat and flour. The result of these experiments was that the grade of the wheat was changed from "No. 3 red" to "No. 1 white," its proper position, and the price was increased 10 cents per bushel. In such ways is the college vindicating its claim as the farmers' friend.

As before stated, over fifty per cent. of the graduates pursue some department of agriculture. Ten have been called to other colleges as instructors in agriculture, etc. The Secretary of the State Horticultural Society, a distinguished member of the signal service, and the editor of the *American Agriculturist*, are also alumni. Prof. Beal, of Botany, is President of the American Society of Agriculture; Prof. Cook, of Zoology, is President of American Beekeeper's Association, and is authority on the subject of bees. His "Manual of Bee-keeping" has passed through three large editions. Bessey's Botany, written by a graduate, now Professor of Botany in the Iowa Agricultural College, is much used in some parts of the country. This is a part of the results accomplished by the college through the thorough education of her graduates.

But nothing has done more to remove the prejudices of the farmers to the college and its work than

Farmers' Institutes. These were organized by the college in 1876. Previous to this, the average farmer would have nothing to do with the college; he would neither visit it, examine its workings, or patronize it or its professors in any way. But now these innovationists were coming into his neighborhood—even into his house. The result was, that many of the most bitter enemies of the school became its staunchest friends, and the following resolution is a sample of those passed at nearly all the institutes:

Resolved, That the Agricultural College, as an institution established for the advancement of the science of agriculture should be fostered by the farmers of Michigan as one of the means by which they are to be helped forward to the position in society to which the importance of their calling entitles them.

During the winter vacation, six institutes were held in different parts of the state, the college furnishing four lectures, and the vicinity the remainder. Each institute lasts two days, with three sessions daily. Each professor attends two institutes, lectures, and leads discussions. Papers so prepared do not contain brilliant theories, but practical facts that every farmer wants to know. Many of the college experiments are here first made public. Free discussion ensues, question and answer engenders good feeling, and the farmer recognizes the college professors as men of practical judgment—not mere theorists. In 1880, the following papers were prepared and read by the college professors, besides others of great interest and profit by practical farmers:

The Social Rank of the Farmer, Pres. Abbot; Chemistry in Agriculture, Prof. Kedzie, of Chemistry; Injurious Insects and How to Destroy Them, Prof. Cook, of Entomology: Indian Corn, Prof. Beal, of Botany; Raising Cattle for Beef, Sec. Baird: Wind Mills, Prof. Carpenter, of Mathematics; Rotation of Crops, Prof. Johnson, of Agriculture; Books and Reading, Prof. McEnan, of Literature; Thoughts on Gardening, Mr. Cassidy, Florist; Improved Methods of Gardening, Mr. Latta, Asst. in Agriculture; The National Sugar Bowl, Mr. Kedzie, Assistant in Chemistry.

These papers are the results of much study and experiment. When read, they become the property of the public, and are published in full in the State Agricultural Reports, and form a valuable acquisition to the farmer's library. The success of the institutes is attested by the fact that they are largely attended and command much attention.

A committee from the State Pomological Society, Executive Committees of the State Grange, and the State Agricultural Society, and Board of Agriculture, together with representatives of the press, are invited each year to visit the farm. The college invites fair inspection, and desires open criticism. Many words of practical advice then given, become the basis for future improvements. During the year, various parties spend the day in a visit to the farm, lunching in the grove, where tables and seats are provided. When they first assemble, they meet in one of the college halls, where a professor tells them of the experiments then going on, and where to find various objects of interest, orchards, wild plants, nursery, etc. A note is made of these, and as all objects are plainly labeled, they can be visited profitably and pleasantly. Many skeptical minds have by such pleasant visits been cleared of doubts, and become friends of the college.

PRESIDENT DWIGHT ON MANNERS.

BY GEN. J. W. PHELPS.

AT the close of the last century and the beginning of this, President Dwight, of Yale College, performed many extensive journeys on horseback through New England and New York. He was a representative man of New England learning, character, and piety. His style is clear, concise, and manly, and not unfrequently runs into the poetic and sublime. He was an attentive observer of all that he saw; and we may, through his eyes, have a clear insight into the best and purest form of the Puritan character. The New England church was still the predominant religion, the other sects not having yet attained those dimensions in which they exist nowadays. The Romish religion was but little known. The Episcopal church had taken strong root in some localities, and Methodist and Baptist congregations were occasionally met with. Such manners as the people had, had been

shaped under the influence of Congregationalism.

But while we meet with many allusions to these manners in his writings, it is evident to our mind that he often mistakes mere habits, customs, and observances, for manners. The difference between the two may be very great. He does not often speak of manners with that æsthetic perception by which there would be left upon the reader's mind a distinct impression of their real quality; though one gathers the idea that the manners of those days were more subdued, less assuming, and less boisterous than they are in these times. He leaves on the whole a favorable impression of them; but at the same time we should infer that they were very far from what they ought to be. They were sincere, honest, kindly; but not graceful, easy, or enlivening. What we ought to expect in a people's manners is that all these qualities should be combined together. We have gained the idea from his narrative that the best ordinary manners that he met with were found among tavern-keepers. The graceful dignity and refined deportment of a tavern-keeper's daughter on Long Island, filled him and his travelling companion with wonder and conjecture.

We may perceive that the pleasing attentions of tavern-keepers were due chiefly to their special profession, and that the expected return in money might have been supposed to lie at the bottom of it. But ought not good manners to be placed on a higher and more general basis, and be observed as the profession of moral duty of every Christian man towards his fellow-man, the reward being self-respect and a consciousness of meriting the good opinion of mankind as well as the approval of heaven?

Unconsciously the college President discloses to us what his general impressions of New England manners were, by an expression which we have several times quoted, but which we here repeat: "*I have often felt*," he says, "*that if life were not now and then refreshed by the refined sentiments and conduct of the smaller number, the coarse and protuberant vices of the clumsy and insolent multitude would render it intolerable.*" Let us dwell upon these words for a few moments, for they are full of significance which it greatly imports us to understand. This Rev. Timothy Dwight, a Puritan of Puritans, after extensive travel and intercourse among his fellow-countrymen, at a time when their manners were probably better than they have been since, felt that life would be intolerable if these manners were not redeemed by occasional instances of good breeding! No stronger evidence than this could be offered, to show the necessity of careful, systematic effort for the cultivation and improvement of manners. The pressing need of the day, and for all time to come is, that the "refined sentiments and conduct of the smaller number" shall be extended, through systematic text-book instruction in our public schools, to "the clumsy and insolent multitude."

This idea, so simple and just, meets with apathy, indifference, and not a little opposition. The "smaller number" who pretend to be possessed of refined manners, seem to be desirous of preserving this distinction between themselves and the masses as a source of pride and gratification; and they would perhaps prefer to establish an order of priests, sacred societies, or even standing armies as dikes between themselves and the insolent crowd, rather than destroy the distinction by imparting refined sentiments and deportment to all. This is natural. Few of us would readily give up what distinguishes us above others; but of all the sacrifices that men must make for the sake of the republic, the surrender of personal distinction from refined manners by communicating them to all alike, ought not to be the one that should be made with the greatest reluctance. Some of our school managers are such coarse natures that they have not respect enough either for the pupils or themselves to conceive that cultivated manners are suitable to all. They would as soon think of giving silk dresses to the children of New York tenement-houses, as to give such children good manners.

But as these children may have a casting vote in our elections, and thus become our governors, it is good policy for the refined and cultivated to attend to their manners, since there is no greater tyranny than the subjecting people of such manners to the rule of men who are distinguished chiefly for their vulgar, "protuberant vices."

At the close of the war of the rebellion, our government adopted the policy of sending West Point graduates to various literary institutions of the country in order to diffuse more widely among the people a knowledge of the military instruction acquired at the national military academy. This was a very good measure; but it is dwarfed into insignificance when compared with the measure of training all our public school children to the observance of the tactics, the rules, and the strategy (so to speak) of

good behavior. Just in proportion as this kind of instruction is neglected, there will be felt a necessity of introducing the bayonet for supplying the defect. West Point was designed by its founders to supply the place of a large standing army which is, of course, incompatible with republican government; but if its influence is neutralized by filling the army with such characters as have been thrust into it since the late war, for an additional reason should we look after the manners of our school children as a means of republican conservatism. It is an abhorrent despotism, which human nature itself resents, to put officers of coarse, protuberant vices in command over men where obedience is reckoned as a virtue. A man who has not been habituated when young to the manner of rendering to every one his just due, is not fit for a republican citizen, and still less for the position of an officer.

While the nation is slowly building a monument to the memory of Washington, how few there are who think of doing a higher and more living honor to his name by making the rules of behavior which he prescribed for himself when a boy, the rules to be read and observed by our school children! It is but a barbarous custom to pile up stones to immortalize the name of the Father of his country when a much better way is offered us. Of all the traits of Washington's character there was none grander, or which showed more wisdom, than that early inspiration which led him while a school-boy, to fashion his own manners to the standard rules of good behavior. These rules have come down to us together with his other writings. If impressed upon children in their early days, they would contribute powerfully to bring about that condition of society which President Dwight felt to be necessary in order that life might be rendered supportable.

The idea that some seem to entertain, that good manners are to come to our school-children from their homes, does not accord with the fact that in many, if not in most of those homes, there are no good manners to communicate, and that our schools must begin the slow work of regenerating our homes through our children. Still less tenable is the ground that manners are something of a mysterious nature which must be communicated by a magnetic thrill from a teacher.

This latter idea is exceedingly prevalent; and it is about as absurd as it would be to suppose that battles are won by the personal heroism and bravery of the general, and not by tactics and discipline. The text-book is as necessary an aid for imparting proper instruction in good manners, as it is for any other branch of learning.

"FORSAN ET HAEC OLIM MEMINISSE JUVABIT."

All scenes must close, yet, ere they go
Into the past, they backward throw
A light, which lingers till the spell
Is broken of their last farewell.
When morning breaks behind the hills,
And all the east with glory fills,
A star still trembles in the west
Upon the mountain's shadowy crest.
Though fading, yet it lingers there,—
Night's loving glance, and parting prayer.

'Tis twilight where the stars arise,
And darker grow the eastern skies,
And farther do the mountains throw
Their shadows o'er the vales below:
Yet from the west the Sun still pours
His parting light in crimson showers
On clouds, which arch the golden way
Through which have fled the Hours of day;
And underneath most tender hues
The daylight weeps away in dews.

The growing grass and budding trees,
The opening flowers and balmy breeze,
The tinkling brooks and birds that sing,
All tell th' approach of genial Spring:
Anon, the Snow-king's parting glance
Hath withered all the tender plants;
The verdure from the hills is fled;
The pinks and violets seem dead;
And feathery flakes fly through the air,
To tell that winter still is there.

The bugle's blast upon the hill
From peak to peak is echoing still,
And sweeter does the lingering strain
Move back from rock to rock again,
And softer does the wavering tone
Through whispering leaves go murmuring on;
Although the hunter from the trail
Is hurrying homeward through the vale.

So all things leave some mark behind them,
Enabling memory to find them,—
Some parting light, some lingering strain
Sweetly to call them back again.

The past is present in the soul
Though years in quick succession roll;
And eyes, when dimm'd by age, can trace
Many an old familiar face
Whose smiles responsive will illume
The gloomy portals of the tomb.
The happiest hours of happiest days,
Like sweetest lines of sweetest lays,
Go with us wheresoe'er we go,
And treasured long the dearer grow.
Age spreads o'er Youth more glorious hues
Than sunset o'er the gathering dews:
And brighter do old memories rise
Than rosy morn through dappled skies.

* * ALTAPIS.

SOME PEDAGOGIC ERRORS.

BY J. DORMAN STEELE.

DURING a recent ramble among schools I jotted down in my note-book a few errors, as they seemed to me, which I detected in the work of certain teachers. Believing these faults—I am almost inclined to term them radical defects—to be more common among inexperienced instructors than we are willing to admit in these days, I venture to reproduce my criticisms, with a few comments thereon, for more general comparison.

1. "*The teacher talks too much.*" This is an especial temptation to an instructor who is well versed in the subject under consideration. Saturated with knowledge, he is like a wet sponge, needing only a touch to cause his information to drip out upon the class. In the recitation criticised as above, the teacher was intelligent, almost learned. His remarks were excellent, and the pupils were interested, and perhaps instructed; but the time was so occupied that there was no opportunity for regular recitation work. No test was made of the pupils' preparation of the lesson, no searching questions were asked, no analysis of the subject was given. It was merely a delightful talk to a number of girls by a scholarly gentleman. It was not teaching. In a neighboring school I witnessed a similar recitation, and while conversing with one of the pupils after class, he slyly remarked, "We always get Miss ——. to talk about something when we haven't got our lesson." Now, the lecture system is beneficial only to advanced pupils, young men and women thirsting for knowledge, who have absorbed all their text-books contain, are eager to know what their professor can impart, and whose minds are trained to receive and retain information.*

With young pupils, mere beginners in study, ignorant of the methods of mental acquirement and assimilation, with no especial taste for work and no power of concentration, there must be class-drill and proofs of previous labor demanded. The recitation is for the benefit of the pupil, not the teacher. In general, it is mentally more profitable to tell a thought than to receive it. Under the talking-system pursued in some schools, the teacher grows much faster than his pupils. He is actively employed all the time; while they are mere recipients, delighted sometimes, indeed, but not held to labor for what they wish to know. He acquires a choice of words, and learns to talk fluently and to tell what he knows; while they get neither experience in expression nor criticism on their use of language and their grammatical mistakes.

A little information may often be imparted to great advantage, it is true, but only to enliven the monotony of hard work and to act as a stimulant to fresh exertion. *The maximum of talking on the part of the pupil and the minimum of talking on the part of the teacher is the perfection of a recitation.* In my own classes when topical recitations are fully established, I have always required the class to conduct the entire recitation from the blackboard diagrams, with only an occasional suggestion or remark during the progress of the work, and a general commentary at the close.

2. "*The teacher makes no point.*" In the recitation I witnessed, there seemed no special goal to be reached, but the pupils were wandering aimlessly about, toiling to get over a certain number of pages of the book. When they finished, it was with an air of relief that another task was performed. On no cheek was there the glow of victory. No one seemed to feel that he had taken a step, a definite, measured step in the path of knowledge, and had gone up a little higher to a better outlook. Neither teacher nor pupil appeared to grasp the relations of that lesson to the one of the day before, and the one assigned for the succeeding day, whereby it became a link in the chain of the term's work, which, if dropped out by inattention or absence, would break the whole asunder.

Now, every lesson should have an object, else the children had better be out on the play-ground breathing fresh air, and developing their muscles. The class should assemble for a specified purpose: to master some difficulty clearly perceived beforehand, upon which they have worked during the time of preparation and are to report their success; to give clearer intelligence about what they have done; to get fresh facts; and to prepare for a new struggle and advance. They should know where they stand when they come to class, and whether they have conquered the point of the lesson; and when they have, it should be with a distinct idea of something they have gained or failed to gain. At the close of each lesson, the teacher should tell the class the object of the next day's work, give directions about doing it, and remove any unsurmountable obstacles, thus preparing the way for intelligent, profitable, and economical labor on the part of the class, and preventing the necessity of individual help, which is so annoying to the teacher and often so injurious to the pupil. If the teacher unfortunately uses a text-book which does not give an analysis of the lesson in bold paragraph headings, he should prepare such an outline and let the students classify the lesson. Many studies admit of a uniform analysis. Thus, in Chemistry I have used the following topical outline—Source, Preparation, Properties, Uses, Compounds; and in the periods of Geology—Location, Kinds of Rocks, Fossils, Remarks. These titles answer as labeled pigeon-holes in which the pupil can sort off all the facts of the lesson and, to *stretch* the figure, are like elastic

* It is a curious fact that while we are turning to the lecture-system from the over-exact text-book recitations of our fathers, the Germans, of whom we learned the new art, are beginning to perceive their mistake and considering the propriety of introducing recitation-drill even in their Universities. Strangely too, the privilege of attending the so-called "Discipline Exercises," the nearest approach to a regular recitation, is eagerly sought after and granted only to the best scholars.

bands, which will expand to receive all knowledge one may gather in future life. They aid alike in learning, reciting and retaining a lesson, and are invaluable in all teaching and studying worth the name.

When a scholar thus looks over the advance lesson, finds the thick underbrush parted by a strong hand; so as to give him an unobstructed view to the end, detects its point, has its analysis clearly in his mind, and is warned of the dangerous places—he feels as if he half knew the lesson already, and sets about it with a light heart and an assurance of success. Such a course begets in him confidence, both in himself and in his teacher. With each lesson there is a consciousness of something done under the direction of a skillful guide. School work is reduced to a system; the pupil knows where he is, and how fast he is advancing; he is constantly reaching a result, and with the satisfaction of progress, the delight of acquisition, and the pleasure in employing his powers usefully, he finds a daily interest in his work.

3. "*Pupils are kept in at recess and after school to study.*" This is literally a *crying* evil. It is a custom handed down to us from the past, and sanctioned by age; but teachers are perceiving its enormity, and are fast discarding the practice. It is both unnecessary and injurious. Scholars may be profitably directed to remain after school for the purpose of receiving suggestions, counsel, etc., from the teacher, but not to study, and *at recess* NEVER! The object of an intermission is to preserve the health of the pupil. Nature demands this, and it is her right. No teacher should rob a child of legitimate exercise. It is a physical wrong. Moreover, in play the superabundant flow of the animal spirits is worked off, and that force is employed in throwing a ball, or running a race, which would otherwise find vent in mischief or restlessness. The whole fifteen minutes usually given is demanded, and the thoughtful teacher, instead of depriving a pupil of any of those precious moments, should urge every one to use them in the best manner possible. It is well to explain this object especially to the few studious girls who are inclined to keep their desks at that time, and to convince them of their duty to preserve their health, and that play-hours should be as sacredly devoted to recuperation as study hours to work. Even when the weather is unfavorable for outdoor sports, the necessary relaxation can be secured by throwing open the windows far enough to obtain fresh air (taking pains that no one shall receive the direct draught) and then putting the school through the light gymnastics.

Keeping a pupil after school to learn a lesson is wrong in principle. It begets a dislike for the teacher, the school-room, the study, and all connected with it. What should be a delight, is made a punishment. Moreover, it punishes the teacher as much as it does the pupil. It wearies him unnecessarily, and, depriving him of time for rest and study, unfits him for work, and so robs the school of its right—his best services. The difficulty with the pupil is generally an inability to concentrate the mind upon the lesson. If that cannot be secured during the fresh, vigorous hours of the day, under the inspiration of the class, and the example of companions, the teacher may well despair of success under less favorable conditions.

I cannot sum up the matter better than in the words of Superintendent Harris, "The cure prescribed (*i. e.* retention after school) only aggravates the disease. Prepare the lesson so that the pupil can carry it by storm, and never allow him to make a dissipated, scattered attack upon it."

SOMETHING OF HOBBIES.

CHARLES M. DRAKE.

"WHAT are 'hobbies,' Mr. Dean?" inquired Willie White as he pulled off the lid of his dinner pail and sat down by John's side to eat his lunch. "Isn't it something to ride on?"

"He's thinking of hobby-horses, Mr. Dean," said Mark Peters. "You've mixed those children up, my boy."

"Well, what are hobbies, Mark?" said John.

"Why, they are when a body gets sort o' crazy on one thing," said Mark confusedly. "Mr. White's hobby is 'orange trees' just now, and papa's is 'raising grapes,' and—"

"That will do," said John, laughing. "I expect we all have our hobbies, Mark. Let me see. How many hobbies have you boys had this term? First it was ball—morning, noon and recess. Then, base, until you all caught colds from so much running and getting over-heated. Then marbles wore the knees off of your pantaloons, and now jack-stones bid fair to last until school closes. So you see hobbies are ridden by little folks as well as by big.

"Do teachers ride hobbies, too, Mr. Dean?" inquired Lucy Peters.

"Yes, indeed," cried Thomas Jefferson. "There is one of Mr. Dean's hobbies, now," and he pointed to Mr. Dean's new house.

"And I think 'hygiene' must be another of Mr. Dean's hobbies," said Ellen Weeks.

"But I mean," explained Lucy, "to ask if teachers have spells at hobbies like the boys have here."

"Certainly they do," replied John. "Their hobbies break out all over the country, just like the measles. The latest one started in Quincy."

"I had quinsy once," said little Dick Brown, who had been too busily engaged with bread and butter to hear more than John's last sentance. "The doctor said it was quinsy, anyway," he added defiantly, as the rest laughed at his blunder.

"Well, there are lots of people that have the Quincy now, Dick. Newspapers discuss it; principals of schools who can teach the Quincy style are advertised for; and hundreds of institutes listen to the way they do at Quincy, as explained by some leading educator who generally manages to make the teachers understand that he has been using those very methods for some years past."

"Do you use the Quincy method, Mr. Dean?" inquired Alpha Black.

"Many of my ways resemble theirs, if I may

judge from what I have heard, but no teacher in a small country school should attempt to use the same plans which would be successful in a larger school where the pupils are graded. In this school I try to adapt my teaching to each one of you individually, but in a large school I should have to use one method for the entire class."

"You told us a while ago about the Grube method. I suppose that was the hobby last year, for our teacher had us all saying 1 plus 1 = 2, and lots more of such nonsense that I knew when I was a baby," said Alpha.

"She must have caught the disease rather late then," said John, smiling, "for I had that disease many years ago."

"How many hobbies have you had, Mr. Dean?" inquired Willie. "Do tell us about them!"

"Yes, please do, Mr. Dean," echoed the others.

Now there are few men who do not delight in talking about themselves before a young and trusting audience, and John Dean was no exception to the general rule. There are few foods to the vanity that are less harmless than the innocent admiration of the young.

"When a person has a hobby," said John, "it displays itself, usually, in one of two ways, viz: collecting what others have made, or making something new. All people like to talk of their hobbies, but while some talk in season and out of season, others only care to talk to those who are interested in the same hobbies which they pursue. Collecting coins was the first hobby I remember, and I ransacked the whole neighborhood for old cents, copper tokens, and such like things. Stray coins with Latin, Spanish, or French words upon them, cost me many an hour of study. I read everything I could find about their manufacture, their value, etc., and though I have sold the most valuable ones, I have a drawer full of old coppers, and not a few silver pieces, to remind me of my first hobby."

"That was the reason you could tell us so much about United States money and English money when we went over it last month, I guess," said Stephen Bennett."

"Perhaps I might have gone into stamp collecting," said John, casting a sly glance at Eben Meeks, who colored a little at this indirect attack, "but stamp-collecting was a much later rage, and I never got in a good place to begin a collection. Scrap-books was my next fancy, and I have some now that I began when about twelve years old, which I value quite highly. My father had once been a book-binder, and he bound four large books for my scraps, and gave me some valuable hints about sorting my selections and pasting them in properly. I devoted one of my books to geographical items, pictures of places, and descriptions of the different countries written by traveling newspaper correspondents. A certain part of the book was given to each of the six grand divisions, and much of the little geographical learning I now possess, is owing to my scrap-book."

"I mean to begin a scrap-book like that right away," exclaimed Willie White.

"Better wait till you get home," said Mark.

"My second scrap-book," continued John, "was devoted to stories of animals. Father called it my B book, because the first four parts were devoted to *boys*, *birds*, *bees*, and *bugs*. I am afraid, though," added he, "that most of my bugs were beetles, spiders, and various other little animals which we improperly call bugs."

"And did you collect bugs and birds' nests and eggs?" inquired Alpha.

"Not until I became older. Then I made my collections of shells and other things which are in my cases at the house."

"Mother calls them Mr. Dean's *queeriosities*," said Harry Brown, "and she says—" Here he stopped short, and blushing furiously, began to dig a hole in the ground with a sharp stick.

"Well, what did she say?" urged Thomas. "Tell us what it was. Something about Mr. Dean, I know."

But Harry could not be prevailed upon to tell, for his mother had said that Mr. Dean himself was the biggest curiosity, and he didn't know whether that was complimentary or not.

"My third scrap-book," said John, "was devoted to poetry and funny things."

"I shouldn't have thought they would have fitted together very well," said Ellen Meeks.

"A pretty appropriate combination," replied John, with mock gravity. And then remembering that Ellen was somewhat given to poetical attempts, he mercifully refrained from enlarging on the subject.

"The fourth book was worn out long ago," continued John. "I pasted romantic stories in it, and so many people borrowed it, that, leaf by leaf it gradually disappeared, while my books of real information are as good now as when I first filled them."

"Do you think novel reading wrong?" timidly inquired Lucy Peters, who was extravagantly fond of the *New York Ledger*.

"O! no. But there are good novels and bad ones. A novel like 'John Halifax,' for instance, makes me the better for reading it; but stories of robbers, and murders, and police reports, whether true or false, are bad things to read or think about."

"I think Mr. Dean must have had a hobby for other books than scrap-books. He has more than I could read in forty years," said Thomas.

"Yes, and my hobbies show in my books if you examine their labels. At first it was poetry until I had nearly a hundred volumes; then it was music. I bought English, Irish, Scotch, Welsh, German, and Italian song-books by the dozen, and took three musical reviews besides."

"I know what the last musical hobby was," exclaimed Mark. "*Pinafore*.

'I'm called little Buttercup,
Dear little Buttercup,"

sang he in a not unmusical voice.

"Hush! that was forbidden by a unanimous vote, months ago," shouted Thomas.

"Though I could never tell why,"

sang Alpha.

"It is not hard for any one to tell what Miss Alpha's hobby is," said John smiling, "since she even sings over her history lesson."

All laughed as they remembered how, a few days before, Alpha had unconsciously hummed a tune while studying her history during the time of school.

"And what hobbies have you had since you began teaching?" inquired Willie.

"The first one was arithmetic. That is a man's hobby, I think, for I never knew a school-mistress to make a hobby out of arithmetic. Dear me! How many ways I have tried to teach arithmetic," said John, more to himself than to the others. "First it was rules; then rules were dropped, and everything went by analysis. Reduce-every-thing-to-unity-first was followed by a severe attack of cancellation from which I have never entirely recovered. Then I tried letting every pupil find out his own methods, which was a great success with some pupils, but an utter failure with others."

"Now it is the sign of equality," said Alpha. "Equations, and nothing without = in it through the whole of arithmetic."

"Very true," said John composedly. "The lines of equality are the nails which fasten together the whole structure of mathematics. Algebra has monopolized the equation far too long. I have often heard pupils say, how much easier it was to understand algebra than arithmetic, and when we teachers have a hard example given us, four out of five fly to algebra for relief. Now I don't believe it is x, y or z that makes algebra the easier study, but it is the equation."

"Some teachers use objects for every step in arithmetic," said Thomas. "I know you use objects, too, but you don't use them all the time, as some teachers do."

"It is a very rare fault to use objects too much in arithmetic," replied John, "yet this is sometimes done. Pupils need to know that there are abstract numbers as well as concrete ones, and it is just as bad to continue to use objects beyond a certain point, as to continue counting on our fingers through the whole of arithmetic."

"That hits you in a tender spot," said Mark, jokingly, to Thomas.

"I'd rather take my fingers to count on than use them for place-marks at the tables," retorted Thomas.

"Did you try as many different ways of teaching other studies, as you did in arithmetic?" asked Ellen Meeks.

"Yes. In geography, for instance, I began by asking the questions just as they came in the book, keeping one finger on the place, and hunting for the answer on the map to see whether the pupil answered my question correctly or not.

"That was the way Miss Smith used to do," said Thomas.

"Then we had outline maps and a globe, and then a fever of map-drawing. Finding some of the children drawing maps on the road, one rainy day, I tried the plan of laying out maps in relief, on the unused part of the playground, and we built mountains and dug valleys, lakes, and rivers, and cut out bays and peninsulas for most of one term. We even tried to scatter wheat, rice, cotton, etc., over the regions where they grew, but the birds picked up the grains, and the winds blew away the cotton. I really think, if I had known more of geography myself, that that plan would have been a great success; but it was a great deal of work, and the patrons called it *pottering*."

"You couldn't have built very high mountains, or they would have been too high for the rest of the map," said Alpha,

"Very true," replied John, "that is the great defect of relief maps. The elevations have to be many times higher than they really are, or they would scarcely be noticed. Well, we tried clay maps in the house, but it was near the end of the term and somehow they were not a success, when we count the time they took. That is the great fault of much map-drawing; it takes up too much time for the average pupil to make a success out of it. Then I gradually drifted into the topical method which I now use in connection with the globe and the outline maps."

"But we draw our own outline maps as we need them, and that is map-drawing; and we color the mountains and highlands a different color from the valleys, and that is nearly the same as building them up," said Ellen.

"Very true. Though a teacher may change his methods every term, he retains certain useful portions of the methods he has discarded, and if nothing more, he learns how he should not teach."

"You forget the journeys we take in imagination from Santos City all over the world, and the stories you tell us of people and animals and products, and—"

"All those are side ornaments and hardly rise to the dignity of methods. You know I tell the little ones many a story in arithmetic about the troublesome pigs that were getting out of one lot and into another while Joe's class was in subtraction, and how much lumber we bought for a fence, and what a hard time we had getting those pigs properly fenced in. But that is only a way to make my real method pleasant. We might, perhaps, call it a piece of a method."

"I don't believe you ever had grammar for a hobby," said Mark Peters. "I remember showing you my grammar the first day of school, and telling you that I hated it; and you said that you did too, and that I had better take the book home, and hide it away somewhere."

"So I did, and we have been studying grammar every day since, Mark. True, we don't parse, and learn all those fine distinctions that are found in grammars, but we learn how to write and speak the English language correctly, and that is grammar. But when I began teaching, I knew Brown's opinions by heart, and made ten-year old pupils parse in "Paradise Lost," and did lots of other cruel things in the name of grammar. Then, as I read works of philology, I gradually shifted around to the word-analysis fever, but I have nearly recovered from that now, though I think a little of it desirable."

"I like to find out what words come from, and hunt up all their sisters, and their cousins, and their aunts," said Mark.

"Spelling was our hobby here three years ago," said Ellen Meeks. "We had spelling twice a day in school, and spelling-school every

Friday night; and it used to be such fun to see the big folks spelled down by some of the school-children. I do love spelling schools."

"The hobby now seems to be against our present spelling," said John. "Whenever the papers mention spelling, it is the reformed spelling they talk of."

"Do you think they will adopt the reformed spelling?" inquired Alpha.

"I hope so. Nearly everybody hopes so. The burden of the work, however, would fall on the printers, and the expense of the change also, so I fear they will fight against the change. I sometimes think it would be good thing for the teachers in each county to circulate a petition to the county papers asking them to make the changes in spelling that I read to you from the *School Journal* the other day. I am sure we could get almost every one in the county to sign such a petition, and the editors would find it hard to refuse them."

"That's a splendid plan," shouted Thomas, excitedly. "Let's write out the petition now, and carry it home for the folks to sign."

Pacific School Journal.

RETROSPECTION.

CHAS. PERRINE.

MAN is the only animal that observes intelligently the flight of time, and comprehends his true relation to the present, the past, and the future. He enjoys a threefold existence. While participating in the living realities of the present, led by fancy, he "pierces the shades of dim futurity, and, by memory's aid, summons before him the panorama of the past, presenting in varied and ineffaceable colors the scenes of former days." Thus the mind grasps the whole extent of time, and finds in it a sphere for the development of its faculties, and their proper use. The future is largely uncertain. Its anticipated deeds are the creations of fancy. The present is an unfinished harvest; its results are undetermined. The past alone is definite and secure. Each, however, brings us its gifts. The future is the abode of our ideals. We picture, in fancy, scenes and characters more perfect than those of the present, and thus are stimulated to the pursuit of some ideal excellence and untried enjoyment. But contact with the living realities of the present is necessary to render men practical and useful.

These, however, are not the sources from which are derived the materials for a thorough education and liberal culture. Whoever seeks to store his mind with the treasures of wisdom, and arrive at the highest excellence, must look to the past for that knowledge, which, applied to the opportunities of the present, will guide him to the attainment of that high success for which, in his better moments, he aspires. He must hold communion with a venerable antiquity, and learn from its great library living truths and lessons of practical wisdom. Here we see, embodied in story and song, in deeds of virtue and valor, the "departed spirits of earth's mighty dead."

Retrospection is a characteristic of the wise. While the ignorant are governed in their opinions by superstition, and inquire into the future by omens, prodigies, and dreams, the prudent mind takes a retrospective view, and from things past learns to reason of things to come.

"History," says Cicero "is the light of truth," and the guide through the future for individuals, for nations, and for humanity, must be that light which shines with undiminished brightness from the long portal of departed years. History is but a record of experiences through which mankind have passed, in the light of which we may view man's capabilities, relations, and duties, and arrive at a knowledge of ourselves, our Author, and our destiny.

"The proper *study* of mankind is man." The proper instructor is the history of his race. Without a written history, progress would be almost impossible. By its aid, the knowledge and experience gained by one generation are preserved for the next, and these, continually increasing, descend like an inheritance from age to age. Thus civilization has advanced from its rudiments. In the records of our own race, this progress can be traced to people whom we might blush to own as ancestors. Of their condition, in times which lie beyond the field of written history or authentic tradition, we can only conjecture. What was the *origin*, and how great is the *antiquity* of man, are problems which, in every age, men have attempted to solve—"attempt how fond and vain." Some of the ancients sought to trace this origin to the Olympian gods, some modern scientists to the African ape, or backward still, through oyster and polyp, to the primeval fire-mist, conclusions equally important, equally true, and reached by those who have allowed their fancy and credulity to usurp the place of reason.

But whether we study man in written history, or in those records carved upon the rocks in prehistoric times, and interpreted by modern science, we shall discover a law of progress, which has ever characterized the human race. And in tracing the application of this law, we can but be impressed

by the resemblance existing between the career of the individual, from infancy to age, and the career of his race. The individual stands as the epitome of the race; in the growth of one we may find an index to the growth of the other. The progress of the individual is a development, an unfolding of his capacities, the germs of which existed in the infant mind. He traverses the various stages of his advancement, and, however much he may change, he preserves his identity, and ever remains the same individual. So with his race. In however rude a condition primeval man may have existed, he existed as man; and as the seed contains within itself the nature of the tree, the form and taste of its fruits, so primitive man possessed the vast but undeveloped capabilities of humanity.

To these was added the instinctive desire for advancement—a desire which characterizes man alone of all created beings. This has impelled him to struggle against the forces of nature, to improve the material world, himself, and society. The same desire pervades humanity still. In all its efforts it has been characterized by the idea of a perfection as yet unattained. All history may be regarded as an attempt to realize this perfection. "For this all the sacrifices which have ever and anon been laid upon the vast altar of the earth have been offered." And not in vain; for in the tangled skein of human affairs, as through revolving ages it is woven into the history of nations, there exists a law; this law is progress, slow, confused, and contradictory, but unceasing development, intellectual, social, and moral, of the human race. And, though society in its progress, like individuals, has been hindered by ignorance, vice, and unrestrained ambition, and buffeted by the same "tempestuous storms that toss the private state, and render life unsweet;" yet if we could trace out the intricate labyrinth of history, we should find the laws of progress as *certain* as the laws of gravity. We should inevitably conclude, that history is not a succession of *fortuitous* events, but that reason directs and has directed the world; that man has a destiny to accomplish, a destiny for which he was created; that humanity has a course to run, whose goal is the universal civilization, liberty, and perfection of man. "Progress is the great truth written by God upon nature, history, and the human soul. Revelation sacrifices this truth, and, girt about by divine powers, man goes forth conquering and to conquer."

WILLIAM PENN.—NO. III.

THE FOUNDER.

"Der mensch muss hinaus,
Ins feindliche Leben."

BUT it was not in the nature of William Penn to rest at ease in what might have been a terrestrial paradise, while so many of his fellow mortals were still sitting in darkness, and his enlightened brethren were suffering cruel persecution. Hence at about three o'clock in the morning of the 26th day of the 7th month, in the year 1677, accompanied by George Fox, Robert Barclay, and George Keith, he set sail on his *second* voyage for Holland, where he landed on the following day. His sole purpose was to extend in two countries of the continent—Holland and Germany—the principles and organization of the Society of Friends or Quakers.

Our object will not justify us in following him in his missionary tour, which seems on the whole to have resulted in no very great success from a religious standpoint. The number of converts was small, and the adventures few and uninteresting; but in other respects it was far-reaching in its consequences. For it was on this missionary tour that Penn acquired not only greater political wisdom, and a larger measure of statesmanship, but he also acquainted himself with the people of other nations and with their ways of thinking—he grew more cosmopolitan—and as his bearing was noble, his address winning, he secured the entire confidence of all with whom he came in contact.

His benevolent disposition impelled him, though a foreigner, to interest himself in behalf of his suffering brethren in Dantzic, a city which had lately been acquired by Poland, whose king showed little mercy to the small band of sectaries in his dominions. That religious opinions conscientiously held should not be interfered with by the State was an idea far in advance of the age; but it was one of the fundamental principles of Penn, who embraced every opportunity of recommemding universal toleration to those in authority. Hence, he now writes:

O king! when did the true religion persecute? When did the true church offer violence for religion? Were not her weapons prayers, tears, and patience? Did not Jesus conquer by those weapons, and vanquish cruelty by suffering? Can clubs and staves, swords and prisons and banishments, reach the soul, convert the heart, or convince the understanding, of man? And here give us leave to remind thee of a noble saying of one, of thy ancestors, Stephen, king of

Poland, "I am king of men; not of consciences; king of bodies, not of souls."

Having traversed a large part of Holland, and the portion of Germany lying between the Weser and the Netherlands, especially the Palatinate, he returned to England, where he arrived on the 24th of October, 1677. As a trustee of the Byllinge interest in West Jersey, his attention had already been drawn to the Western Continent. Here he manifested his sincerity by advising that the provision that no one should "in the least be punished or hurt in person, estate, or privilege, for the sake of his opinion, judgment, faith, or worship toward God in matters of religion; for no men, nor numbers of men, upon earth have power to rule over men's consciences," should be inserted in the fundamental law of West Jersey. Having diligently fostered that colony by sending thither no less than 414 passengers, proprietors with their servants and children, in one year, and having continued the good work until about 800 settlers, mostly Quakers and persons of property and character, had colonized the new land, and the government being indebted to his father, whose sole heir he was, in the sum of upwards of $80,000 he now, in 1681, petitioned the king, Charles the Second, and obtained in payment of his claim, letters patent constituting him proprietary of "all that tract or part of land in America, bounded on the east by the Delaware river, from twelve miles northward of New Castletown, unto the three-and-fortieth degree of northern latitude. The said land to extend westward five degrees in longitude, to be computed from the said eastern bounds, and the said lands to be bounded on the north by the beginning of the three-and-fortieth degree of northern latitude, and on the south by a circle drawn at twelve miles distance from New Castle northward and westward, unto the beginning of the fortieth degree of northern latitude, and then by a straight line westward to the limits of longitude above mentioned." The grant was "by fealty only," yielding and paying to the king *two beaver skins* annually, to be delivered at the Castle of Windsor, and also the fifth part of all gold and silver ore which should be found.

On assuming the government of his province, he issued his proclamation to his vassals and subjects in the following words:

My Friends: I wish you all happiness here and hereafter. These are to let you know that it hath pleased God in his providence to cast you within my lot and care. It is a business that though I never undertook before, yet God has given me an understanding of my duty, and an honest mind to do it uprightly. I hope you will not be troubled at your change, and the king's choice; for you are now fixed at the mercy of no governor that comes to make his fortune great. You shall be governed by laws of your own making, and live a free, and, if you will, a sober and industrious people. I shall not usurp the right of any, or oppress his person. God has furnished me with a better resolution, and has given me his grace to keep it. In short, whatever sober and free man can reasonably desire for the security and improvement of their own happiness, I shall heartily comply with, I beseech God to direct you in the way of righteousness, and therein prosper you and your children after you. I am your true Friend,

WM. PENN.

LONDON, 8th of the month called April, 1681.

Nor would he sacrifice his duty as a man to his emoluments as a sovereign. A company of traders offered him £6,000 and an annual revenue for a monopoly of the Indian traffic between the Delaware and the Susquehanna; but, although, in his zeal to rescue his suffering brethren from persecution, he had, by heavy expense in courts of law, and at court, and more especially by his enterprise of planting a colony, impaired his resources, and although to a father of a family, in straightened circumstances, the temptation was great, yet his noble decision was, "I will not abuse the love of God, nor act unworthy of his providence, by defiling what came to me clean."

As absolute proprietary and feudal sovereign of a province, Penn was now in a position to make "The Holy Experiment" of universal toleration, proving that "*Non ignarus mali*," he had learned "*miseris succurrere*," (himself not ignorant of misfortune, he had learned to help the unfortunate), for in April, 1681, he writes to his friends:

As my understanding and inclination have been much directed to observe and reprove mischiefs in government, so it is now put into my power to settle one. For the matters of liberty and privilege, I propose that which is extraordinary, and to leave *myself and successors no power of doing mischief, that the will of one man may not hinder the good of the whole country.*

Among his instructions to Wm. Crispin, John Bezar, and Nathaniel Allen, appointed as his commissioners to proceed to the colony, make arrangements for a settlement, lay out a town, and treat with the Indians, we find the following:

2. Let the rivers and creeks be sounded on the Pennsylvania side of the river Delaware, "especially at Upland (Chester) in order to settle a great town, and be sure to make your choice where it is most navigable, high, dry, and

healthy; that is, where most ships may best ride, of deepest draught of water; if possible, to load or unload at the bank or key-side, without boating or literage. . . . It would be well if the river coming into that creek be navigable at least for boats up into the country."

3. "Such a place being found out, lay out ten thousand acres contiguous to it, in the best manner you can, as the bounds and extent of the liberties of the said town."

12. "Be sure to settle the figure of the town so as that the streets hereafter may be uniform down to the water from the country bounds; let the place of the storehouses be made on the middle of the key, which will yet serve for market and state-houses, too. This may be ordered when I come, only let the houses be built on a line, or upon a line as much as may be."

13. "Pitch upon the very middle of the plat, where the town or line of houses is to be laid or run, facing the harbor or great river, for the situation of my house, and let it be not the tenth part of the town, as the conditions say, viz: that out of every hundred thousand acres, shall be reserved to me ten thousand acres, but I shall be contented with less than a thirtieth part, to wit: three hundred acres, whereas several will have two, by purchasing two shares, that is, ten thousand acres, and it may be fitting for me to exceed a little."

14. "The distance of each house from the creek or harbor should be, in my judgment, a measured quarter of a mile, at least two hundred paces, because of building hereafter streets downward to the harbor."

15. "Let every house be placed, if the person pleases, in the middle of its plat, as to the breadth-way of it, that so there may be ground on each side for gardens or orchards, or fields, that it may be *a green country town*, which will never, be burnt and always wholesome." . . .

Wonderful is the wisdom and foresight manifested in these instructions, for the location and plan of what is now, indeed! not the "green country town that would never be burnt and always be wholesome," in part because his original views were not carried out; and yet Philadelphia is emphatically the city of homes. It is interesting to observe, too, how posterity is gradually executing his design by the creation of Fairmount Park, and the erection of the Public Buildings where he had directed that they should be located.

To the Indians, the native children of the American forest, the possessors of the soil, he announced his advent in the following letter, which well deserves to be called a state paper worthy of the Christian in his dealings with the heathen.

LONDON, 18th of 8th mo., 1681.

My Friends: There is one great God and power that hath made the world and all things therein, to whom you and I, and all people, owe their being and well-being, and to whom you and I must one day give an account for all that we have done in the world. This great God has written his law in our hearts, by which we are taught and commanded to love, and to help, and to do good to one another. Now, this great God hath been pleased to make me concerned in your part of the world; and the king of the country where I live hath given me a great province therein; but I desire to enjoy it with your love and consent, that we may always live together as neighbors and friends; else what would the great God do to us, who hath made us (not to devour and destroy one another, but) to live soberly and kindly together in the world? Now, I would have you well observe that I am very sensible of the unkindness and injustice which have been too much exercised toward you by the people of these parts of the world, who have sought themselves to make great advantage by you, rather than to be examples of justice and goodness unto you. This I hear hath been a matter of trouble to you, and caused great grudging and animosity, sometimes to the shedding of blood, which hath made the great God angry. But I am not such a man, as is well known in my own country. I have great love and regard toward you, and desire to win and gain your love, and friendship, by a kind, just, and peaceable life; and the people I send are of the same mind, and shall in all things behave themselves accordingly; and if in anything any shall offend you or your people, you shall have a full and speedy satisfaction for the same by an equal number of just men on both sides, that by no means you may have just occasion to be offended against them.

I shall shortly come to see you myself, at which time we may more largely and freely confer and discourse of these matters. In the meantime, I have sent my commissioners to treat with you about land and a firm league of peace. Let me desire you to be kind to them and to the people, and receive the presents and tokens which I have sent you, as a testimony of my good will to you and of my resolution to live justly, peaceably and friendly with you.

I am your loving friend,

WILLIAM PENN.

The first emigrants after the cession to Penn arrived in the ship "John and Sarah," of London, in the fall of 1681. And now, the mind of Penn was deeply agitated by thought on the government which he should establish, and of which "The Frame" was published in the following May. The preface explanatory of the general principles of government is as follows:

PREFACE TO FRAME OF GOVERNMENT,

When the great and wise God had made the world, of all his creatures it pleased him to choose man his deputy to rule it; and to fit him for so great a charge and trust, he did not only qualify him with skill and power, but with integrity to use them justly. This native goodness was equally his honor and his happiness, and whilst he stood here, all went well; there

was no need of coercive or compulsive means; the precept of divine love and truth in his bosom, was the guide and keeper of his innocency. But lust prevailing against duty, made a lamentable breach upon it; and the law, that had before no power over him, took place upon him and his disobedient posterity, that such as would not live conformably to the holy law within, should fall under the reproof and correction of the just law without, in a judicial administration.

This the Apostle teaches in divers of his epistles. "The law," says he, "was added because of transgression." In another place, "knowing that the law was not made for the righteous man, but for the disobedient and ungodly, for sinners, for unholy and profane, for murderers." * * * and others. But this is not all; he opens and carries the matter of government a little further: "Let every soul be subject to the higher powers, for there is no power but of God. The powers that be are ordained of God; whosoever therefore resisteth the power, resisteth the ordinance of God; for rulers are not a terror to good works, but to evil. Wilt thou then not be afraid of the power? Do that which is good, and thou shalt have praise of the same.—He is the minister of God to thee for good.—Wherefore ye must needs be subject, not only for wrath, but for conscience' sake."

This settles the divine right of government beyond exception, and that for two ends: first, to terrify evil doers; secondly, to cherish those that do well; which gives government a life beyond corruption, and makes it as durable in the world as good men shall be. So that government seems to me a part of religion itself, a thing sacred in its institution and end; for if it does not directly remove the cause, it crushes the effects of evil, and is, as such, though a lower, yet an emanation of the same divine power that is both author and object of pure religion; the difference lying here, that the one is more free and mental, the other more corporal and compulsive in its operation; but that is only to evil doers, government itself being otherwise as capable of kindness, goodness, and charity, as a more private society. They weakly err who think there is no other use of government than correction, which is the coarsest part of it, Daily experience tells us, that the care and regulation of many other affairs, more soft and daily necessary, make up much the greatest part of government, and which must have followed the peopling of the world, had Adam never fallen, and will continue among men on earth under the highest attainments they may arrive at by the coming of the blessed second Adam, the Lord from heaven. Thus much of government in general, as to its rise and end.

For particular frames and modes, it will become me to say little, and comparatively, I will say nothing. My reasons are, first, that the age is too nice and difficult for it, there being nothing the wits of men are more busy and divided upon. 'Tis true they seem to agree in the end, to wit, happiness, but in the means they differ, as to divine, so to this human felicity; and the cause is much the same, not always want of light and knowledge, but want of using them rightly. Men side with their passions against their reason: and their sinister interests have so strong a bias upon their minds, that they lean to them against the good of the things they know.

Secondly, I do not find a model in the world, that time, place, and some singular emergencies have not necessarily altered; nor is it easy to frame a civil government that shall serve all places alike.

Thirdly, I know what is said by the several admirers of monarchy, aristocracy, and democracy, which are the rule of one, of a few, and of many, and are the three common ideas of government when men discourse on that subject. But I choose to solve the controversy with this small distinction, and it belongs to all three: any government is free to the people under it, whatever be the frame, where the laws rule and the people are a party to those laws; and more than this is tyranny, oligarchy, or confusion.

But lastly, when all is said, there is hardly one frame of government in the world so ill designed by its first founders, that in good hands would not do well enough; and history tells us, that the best in ill ones can do nothing that is great and good; witness the Jewish and Roman states. Governments, like clocks, go from the motion men give them; and as governments are made and move by men, so by them they are ruined too. Wherefore governments rather depend upon men than men upon governments. Let men be good, and the government cannot be bad. If it be ill, they will cure it. But if men be bad, let the government be ever so good, they will endeavor to warp and spoil it to their turn.

I know some say, Let us have good laws, and no matter for the men that execute them. But let them consider, that though good laws do well, good men do better; for good laws want good men and be abolished or evaded by ill men; but good men will never want good laws, nor suffer ill ones. 'Tis true, good laws have some awe upon ill ministers, but that is where these have not power to escape or abolish them, and where the people are generally wise and good; but a loose and depraved peole (which is to the question) love laws and an administration like themselves. That, therefore, which makes a good constitution must keep it, namely, men of wisdom and virtue, qualities that, because they descend not with worldly inheritances, must be carefully propagated by a virtuous education of youth, for which after ages will owe more to the care and prudence of founders and the successive magistracy, than to their parents for their private patrimonies.

These considerations of the weight of government, and the nice and various opinions about it, made it uneasy to me to think of publishing the ensuing Frame and Conditional Laws, foreseeing both the censures they will meet with from men of different humours and engagements, and the occasion they may give of discourse beyond my design.

But next to the power of necessity, which is a solicitor that will take no denial, this induced me to a compliance, that we have, with reverence to

God and good conscience to men, to the best of our skill contrived and composed the frame and laws of this government to the great end of all government, viz.: to support power in reverence with the people, and to secure the people from the abuses of power, that they may be free by their just obedience, and the magistrates honorable for their just administration; for liberty without obedience is confusion, and obedience without liberty is slavery.

To carry this evenness is partly owing to the constitution, and partly to the magistracy; where either of these fail, government will be subject to convulsions; but where both are wanting, it must be totally subverted; then where both meet, the government is like to endure, which I humbly pray and hope God will please to make the lot of this of Pennsylvania. Amen.

WILLIAM PENN.

In this Frame, too long to be inserted here, is a provision relating to the public schools, as follows: "The governor and council to erect and order all public schools, and encourage useful sciences and laudable inventions." In the Code of Laws following the Frame, "All children of the age of twelve years to be taught some useful trade;" "All prisons to be workshops;" "All marriages to be published before solemnized, and to be solemnized by the parties taking one another as husband and wife before witnesses, signing a certificate of the same, and having it recorded;" "In the courts all persons might appear in their own way, and plead their own cause." Of this Frame of Government and Code of Laws, Bancroft says:

"This is the praise of William Penn, that, in an age which had seen a popular revolution shipwreck popular liberty among selfish factions; which had seen Hugh Peters and Henry Vane perish by the hangman's cord and the axe: in an age when Sydney nourished the pride of patriotism rather than the sentiment of philanthropy, when Russell stood for the liberties of his order, and not for new enfranchisements; when Harrington, and Shaftesbury, and Locke, thought government should rest on property—Penn did not despair of humanity, and though all history and experience denied the sovereignty of the people, dared to cherish the noble idea of man's capacity for self-government. Conscious that there was no room for its exercise in England, the pure enthusiast, like Calvin and Descartes, a volunteer exile, was come to the banks of the Delaware, to institute 'The Holy Experiment.'"

The letter, written at his departure, to his wife and children, will be found elsewhere in these papers, in the article entitled the "Story of the Purchase." Having landed from the ship "Welcome," after a voyage of about two months, at New Castle, on the 27th of October, 1682, he received possession of the town and county adjoining, which was signified by "the delivery of turf, and twig, and water, and soyle of the river Delaware." Tradition describes the journey of Penn to have been continued with a few friends in an open boat, in the earliest days of November, to the beautiful bank, fringed with pine trees, on which the city of Philadelphia was soon to rise. We can readily imagine how delighted he must have been, while passing up the noble Delaware, beholding its banks shaded with majestic forests clad in the variegated foliage of autumn, its surface covered with wild fowl, and everything around indicating a solitude and grandeur peculiar to the New World.

How intensely interesting must have been the scene, especially if enlivened, as it probably was, by the Indians in their canoes, advancing to meet him. He had heard and read descriptions of their persons and manners; he had written kind letters to them, and had thought much upon the means of promoting their improvement; but now for the first time he looked upon their athletic forms and striking features, their robes of fur and waving plumes; and while emotions of love and good will arose in his heart, he felt that these too were the children of the Universal Parent.

Against his arrival, "the Indians, as well as the whites, had severally prepared the best entertainment the place and circumstances could admit." William Penn endeared himself to the Indians by his marked condescension and acquiescence in their wishes. He walked with them, sat with them on the ground, and ate with them of their roasted acorns and hominy. At this they expressed their great delight, and soon began to show how they could jump, etc., in which athletic sport, William Penn, like George Washington, is said to have excelled. The natural sequel to this meeting was the "Great Treaty," the exact date of which is not recorded, but it was no doubt in the latter part of November, 1682. The exact spot is designated by a monument erected since the great elm tree under which the meeting took place, fell.* It is worthy of remark that the British General Simcoe, when, during the Revolution, his troops occupied the town, placed a guard around the venerable tree to protect it from injury. Let us endeavor to picture the scene as Janney describes it in his instructive Life of Penn:

*The elm tree at Kensington, called the Treaty Tree, was blown down in 1810. It was 24 feet in girth, and believed to be about 280 years old. A part of the trunk was sent to the Penn family in England, and of the remainder, many small articles of furniture were made, which are preserved as precious relics by their fortunate possessors.

TREATY WITH THE INDIANS.

It is near the close of November—the lofty forest trees on the banks of the Delaware have shed their summer attire, the ground is strewed with leaves, and the council fire burns brightly, fanned by the autumnal breeze. Under the wide-branching elm the Indian tribes are assembled, all unarmed, for no warlike weapon is allowed to disturb the scene. In front are the chiefs, with their counsellors and aged men on either hand. Behind them, in the form of a half-moon, sit the young men and some of the aged matrons; while beyond, and disposed in still widening circles, are seen the youth of both sexes. Among the assembled chiefs there is one who holds a conspicuous rank; the Great Sachem Taminend, one of nature's noblemen, revered for his wisdom and beloved for his goodness.* But, see! a barge is approaching, bearing at its masthead the broad pennant of the governor; the oars are plied with measured strokes, and near the helm sits William Penn, attended by his conncil. Among them are Markham, his secretary; Holme, surveyor-general; Simcox, Haigue, Taylor and Pearson. On the river bank, waiting with others to join them, is Lacy Cock, the hospitable Swede, whose dwelling is near the treaty ground. They are plainly dressed, and the proprietary is only distinguished from the rest by a sky-blue sash of silk network that encircles his waist. They land and advance toward the council fire: the governor, having his cousin Markham on the right, and his friend Pearson on the left, is preceded by some of his attendants, bearing presents, which they spread upon the ground. They pause when they approach the council fire—Taminend puts on his chaplet, surmounted by a small horn, the emblem of kingly power, and then, through an interpreter, he announces to William Penn that the nations are ready to hear him. Being thus called upon, he begins his speech:

"The Great Spirit," he says, "who made me and you, who rules the heavens and the earth, and who knows the innermost thoughts of men, knows that I and my friends have a hearty desire to live in peace and friendship with you, and to serve you to the utmost of our power. It is not our custom to use hostile weapons against our fellow-creatures, for which reason we have come unarmed. Our object is not to do injury, and thus to provoke the Great Spirit, but only to do good.

"We are met on the broad pathway of good faith and good will, so that no advantage is to be taken on either side, but all to be openness, brotherhood, and love." Here the governor unrolls a parchment containing stipulations for trade and promises of friendship, which, by means of an interpreter, he explains to them, article by article, and placing it on the ground, he observes that the ground shall be common to both people. He then proceeded, "I will not do as the Marylanders did, that is, call you children or brothers only; for parents are apt to whip their children too severely, and brothers sometimes will differ; neither will I compare the friendship between us to a chain, for the rain may rust it, or a tree may fall and break it; but I will consider you as the same flesh and blood with the Christians, and the same as if one man's body were to be divided into two parts."*

This speech being listened to by the Indians in perfect silence, and with much gravity, they take some time to deliberate, and then the king orders one of his chiefs to speak to William Penn.

The Indian orator advances, and in the king's name salutes him; then, taking him by the hand, he makes a speech, pledging kindness and good neighborhood, and that the Indians and English must live in love as long as the sun and moon shall endure.†

There is evidence to show that the stipulations of this treaty or league of amity were committed to writing, but the record has been sought for without success. We have, however, the principal items, or links of the chain, as mentioned by Governor Gordon, in a speech he made to the same tribes, the 26th of May, 1728. He said:

"*My Friends and Brethren:* You are sensible that the great William Penn, the father of this country, when he first brought the people with him over the broad sea, took all the Indians, the old inhabitants, by the hand, and because he found them to be a sincere, honest people, he took them to his heart, and loved them as his own. He then made a strong league and chain of friendship with them, by which it was agreed that the Indians and the English, with all the Christians, should be as one people. Your friend and father, William Penn, still retained a warm affection for all the Indians, and strictly commanded those whom he sent to govern this people, to treat the Indians as his children, and continued in his love for them until his death. * *

"I am now to discourse with my brethren, the Conestogoes, Delawares, Gawanese, and Shawnese Indians upon the Susquehanna, and to speak to them.

"My Brethren: You have been faithful to your leagues with us, your hearts have been clean, and you have preserved the chain from spots or rust, or if there were any, you have been careful to wipe them away; your leagues with your father, William Penn, and with his governors, are in writing on record, that our children, and our children's children, may have them in everlasting remembrance. And we know that you preserve the memory of those things among you by telling them to your children, and they again to the next generation, so that they remain stamped on your minds never to be forgot.

"The chief heads or strongest links of this chain, I find, are these nine, viz:

"1. That all Wm. Penn's people or Christians, and all the Indians, should be brethren, as the children of one Father, joined together as with one heart, one head, and one body.

"2. That all paths should be open and free to both Christians and Indians.

"3. That the doors of the Christians' houses

* Duponceau's Oration and Heckwelder's History of Indians.

* Clarkson. † W. P.'s Letter to Free Society of Traders.

should be open to the Indians, and the houses of the Indians open to the Christians, and that they should make each other welcome as their friends.

"4. That the Christians should not believe any false rumors or reports of the Indians, nor the Indians believe any such rumors or reports of Christians, but should first come as brethren to inquire of each other; and that both Christians and Indians, when they have any such false reports of their brethren, they should bury them as in a bottomless pit.

"5. That if the Christians heard any ill news that may be to the hurt of the Indians, or the Indians heard any such ill news that may be to the injury of the Christians, they should acquaint each other with it speedily, as true friends and brethren.

"6. That the Indians should do no manner of harm to the Christians, nor to their creatures, nor the Christians do any hurt to the Indians, but each treat the other as brethren.

"7. But as there are wicked people in all nations, if either Indians or Christians should do any harm to each other, complaint should be made of it by the persons suffering, that right may be done; and when satisfaction is made, the injury or wrong should be forgot, and be buried as in a bottomless pit.

"8. That the Indians should in all things assist the Christians, and the Christians assist the Indians, against all wicked people that would disturb them.

"9. And lastly, that both Christians and Indians should acquaint their children with this league and firm chain of friendship made between them, and that it should always be made stronger and stronger, and be kept bright and clean, without rust or spot, between our children and children's children, while the creeks and rivers run, and while the sun, moon, and stars endure."

His "Code," after various amendments, among which he suggested the one requiring the estates of intestates to go to the wife and children, thus abrogating the English law of primogeniture, and promoting that general equality of condition, and division of property, which is deemed so essential in a republican form of government, was finally adopted in this same year. The first section so much admired for its liberality and eloquence, reads as follows:

Almighty God, being only Lord of conscience, Father of lights and spirits, and author as well as object of all Divine knowledge, faith, and worship, who only can enlighten the mind, and persuade and convince the understanding of people, in due reverence to his sovereignty over the souls of mankind: it is enacted by the authority aforesaid, that no person now or at any time hereafter living in this province, who shall confess and acknowledge one Almighty God to be the creator, upholder, and ruler of the world, and that professeth him or herself obliged in conscience to live peaceably and justly under the civil government, shall in anywise be molested or prejudiced for his or her conscientious persuasion or practice; nor shall he or she at any time be compelled to frequent or maintain any religious worship, place, or ministry whatever, contrary to his or her mind, but shall freely and fully enjoy his or her Christian liberty in that respect, without any interruption or reflection; and if any person shall abuse or deride any other for his or her different persuasion and practice in matter of religion, such shall be looked upon as a disturber of the peace, and be punished accordingly.

But to the end that looseness, irreligion, and atheism may not creep in under pretense of conscience, in this province: Be it further enacted by the authority aforesaid, that according to the good example of the primitive Christians, and for the ease of the creation, every first day of the week, called the Lord's Day, people shall abstain from their common toil and labour, that whether masters, parents, children, or servants, they may the better dispose themselves to read the Scriptures of truth at home, or to frequent such meetings of religious worship abroad as may best suit their respective persuasions.

His impressions of the country will be found in a letter addressed to the London Society of Free Traders, reprinted in the article found elsewhere, entitled "Two Hundred Years Ago," and it now only remains for us to record his departure to his native land after a sojourn of about two years in his beloved Pennsylvania. The following letter, written from on board the vessel closes the interesting chapter of his presence in the colony:

"To THOMAS LLOYD, J. CLAYPOLE, J. SIMCOX, C. TAYLOR, and J. HARRISON, to be communicated in meetings in Pennsylvania and the territories thereunto belonging, among Friends.

My love and my life is to you, and with you, and no water can quench it, nor distance wear it out, or bring it to an end. I have been with you, cared over you, and served you with unfeigned love; and you are beloved of me, and near to me beyond utterance. I bless you in the name and power of the Lord, and may God bless you with his righteousness, peace, and plenty, all the land over! O that you would eye him in all, through all, and above all the labour of your hands, and let it be your first care how you may glorify him in your undertakings; for to a blessed end are you brought hither; and if you see and keep but in the sense of that providence, your coming, staying, and improving, will be sanctified; but if any forget him, and call not upon his name in truth, he will pour out his plagues upon them, and they shall know who it is that judgeth the children of men.

O, you are now come to a quiet land; provoke not the Lord to trouble it! And now that liberty and authority are with you, and in your hands, let the government be upon His shoulders in all your spirits, that you may rule for him under whom the princes of the world will one day esteem it their honor to govern and serve in their places. I cannot but say, when these things come mightily upon my mind, as the apostle said of old,

"What manner of persons ought we to be in all godly conversation?" Truly the name and honour of the Lord are deeply concerned in you as to the discharge of yourselves in your present station, many eyes being upon you; and remember that, as we have been belied about disowning the true religion, so, of all government, to behold us exemplary and Christian in the use of it it will not only stop our enemies, but minister conviction to many on that account prejudiced. O that you may see and know that service, and do it for the Lord in this your day!

And thou, Philadelphia, the virgin settlement of this province, named before thou wert born, what love, what care, what service, and what travail has there been to bring thee forth and preserve thee from such as would abuse and defile thee!

O that thou mayest be kept from the evil that would overwhelm thee: that, faithful to the God of thy mercies, in the life of righteousness, thou mayest be preserved to the end! My soul prays to God for thee, that thou mayest stand in the day of trial, that thy children may be blessed of the Lord, and thy people saved by his power. My love to thee has been great, and the remembrance of thee affects my heart and mine eye. The God of eternal strength keep and preserve thee to his glory and thy peace!

So, dear friends, my love again salutes you all, wishing that grace, mercy, and peace, with all temporal blessings, may abound richly amongst you! So says, so prays, your friend and lover in the truth,

WILLIAM PENN.

OBITUARY.

PROF. WILLIAM BOGLE.

AT the Soldiers' Orphans' Institute, Philadelphia, on the 15th of last March, the subject of this sketch died of that dreaded disease pneumonia. Although sick but one short week, yet during that time his sufferings were terrible; but he bore them with that heroic Christian fortitude, which have ever been characteristic of the man.

Prof. Bogle was born at Brownsville, Licking county, Ohio, in May, 1821. His father was one of the early pioneers of that State. His early life was spent on his father's farm; but early acquiring a desire for higher education than the public schools of his district afforded, he went to an academy in a neighboring town during the winter months, and worked on the farm during the summer. Thus he prepared himself by hard work and his own exertions for Franklin College, which he entered at the age of eighteen, from which institution he graduated with honor at the age of twenty-two years. So highly had he distinguished himself that soon after his graduation he was elected Professor of Mathematics and Languages in his *Alma Mater*. After some years of successful work in Franklin College, he accepted the Professorship of Languages in Sharon College. While engaged in this position, his reputation as a teacher became so widely known that he was elected Principal of the public schools of the city of Zanesville, Ohio. After his marriage at Zanesville, he and his wife took charge of Mt. Vernon Academy, and the reputation they both had as successful teachers was the means of soon filling their school. Having a longing for his favorite work in college, however, he accepted the Professorship of Languages in Madison College. After remaining here a few years, he became Principal of the public schools of McConnellsville, which was his last work in his native State. Leaving Ohio, he came to Pittsburgh as Principal of one of the ward schools. Here he taught successfully for several years, when he again started a seminary for young ladies. This venture proved very successful. He remained here until 1872, when he was elected Principal of the Soldiers' Orphans' School at Mercer, Pa. Here he remained five years. During the administration of Prof. Bogle and his wife at this school, it became one of the best in the State. In 1877 he took charge of the McAllisterville Soldiers' Orphans' School, where he remained one year; and so successful was he in both of these schools that the Board of Managers of the Soldiers' Orphans' Institute induced him to come to Philadelphia as Superintendent of this Institute. In this last position he had worked successfully for nearly four years.

Prof. Bogle was one of Nature's noblemen, as Dr. White so well expressed it in his funeral eulogy: "He was emphatically a good man, such an one as the psalmist refers to when he says: 'Mark the perfect man, and behold the upright, for the end of that man is peace.' A more conscientious man in the discharge of his duty I have never seen." Those sterling principles of right and truth, which he had received in the United Presbyterian Church from his father in early youth, clung to him throughout life. Nothing could make him swerve one inch from the path of rectitude. But it is as teacher that his memory will be revered; the influence of his noble example, and his character as a man, will long be felt by the hundreds of pupils he has instructed. It is here that his forty years of school life will bear their rich harvest. Few men have spent so many years, or filled so many responsible positions, in the teacher's profession.

P. J. U.

HON. JAMES T. LEONARD.

Hon. James T. Leonard, the founder of the Leonard Graded School of Clearfield, Pa., died on Tuesday, July 25th, aged eighty-two years. He had been in failing health for more than a year prior to his death, and had for some months previous lost all use of his mental faculties. In the year 1872 he contributed very largely of his means towards the erection of the fine Graded School building which bears his name, and his devotion to the interests of the school for many years afterward was, indeed, most praiseworthy. He was a daily visitor to the school as long as he continued in good health, and was always accorded the profound respect of pupils and teachers, and on several occasions received most substantial tokens of their esteem. He became a member of the school board in 1872, and continued to serve as a member of that body until the time of his death. His estimable wife, who made many valuable donations to the school library, etc., died more than a year ago, and now their remains lie together within sight of the beautiful building whose interests were advanced so greatly by their liberality. Besides having done so much for the education of the youth of Clearfield, he served in several prominent public positions in the county. Quite early in life he served as prothonotary, and later as Associate Judge. He was a prominent lumberman and banker, and his estate is estimated to be worth nearly a million of dollars. His loss will be sadly felt throughout the whole county.

EDITORIAL DEPARTMENT.

THE SCHOOL JOURNAL.

LANCASTER, AUGUST, 1882.

E. E. HIGBEE. - - - - J. P. McCASKEY.

THE State Normal School at Shippensburg passes under new management with the opening of its next term, Prof. S. B. Heiges, of York, having recently accepted the principalship. The new principal is a many-sided business man, of broad acquirements and wide experience in the educational field, and, with plenary powers accorded him by the authorities of the school, will make it what it ought to be—a successful institution, known and favorably regarded throughout the State.

THE proceedings of the very interesting meeting of the State Teachers' Asssociation, held at Pottsville a few weeks since, will appear in full in our issue for September. The attendance was unusually large, the total enrollment of members being nearly five hundred, and the arrangements of the various committees were excellent; those by the Local Committee especially were upon the broad-gauge plan and admirable. Not in the history of the Association has it experienced a more generous welcome. The promises made at Washington by Mr. Passmore last summer were fully redeemed, and the Association had three "red-letter days" among the hills of Schuylkill county. The men of Pottsville who contributed most to this result were Mr. J. A. M. Passmore, Supt. B. F. Patterson and Mr. J. J. Cake. Supt. Geo. W. Weiss had his Schuylkill teachers very largely represented. Supt. Saml. A. Baer, of Reading, was "at home" as chairman of the Executive Committee, and Prof. Andrews conducted the business of the sessions with readiness and despatch.

THE preparations in Philadelphia for the William Penn anniversary go forward in such manner as to warrant a very grand celebration of the event. The Bi-Centennial Association has appointed an Executive Committee, a sub-Committee on Ceremonies of Tuesday, October 24th; sub-Committee for Ceremonies of Wednesday, October 25th, Trades Display; sub-Committee on Ceremonies of Thursday, October 26th, Musical Festival, Knights Templar, Regattas, Schools, Welsh Choirs, etc.; sub-Committee on Ceremonies of Friday, October 27th, Display of the Military, Land and Naval Forces, Illumination, etc; sub-Committee on Transportation, and Committee on Welsh Choirs. Like the old Roman triumphs, the display will be continued from day to day, but the triumphal procession will be in honor of the arts of peace rather than of conquests in war, the civilization of the Nineteenth Century in contrast with that of the Empire of the Cæsars.

THE new catalogue of the Edinboro State Normal School makes a handsome showing for that thriving institution. Under the vigorous administration of Prof. J. A. Cooper, of whom everybody thinks when the Edinboro School is mentioned, it has come prominently to the front as a training school for such exclusively as are preparing for the work of teaching. Prof. Cooper, during his July vacation, attended the Ohio convention at Niagara Falls, and we see his name mentioned in the proceedings of the Saratoga meeting. He is, in service, probably the oldest Normal School principal in the State, having been connected with this school for nearly a quarter of a century, at least twenty years of which he has been its principal. This is a practical illustration of "Civil Service," from which Edinboro has reaped much benefit.

THE new Music-Page Supplement, No. 11, has just been issued. The collection of songs and hymns, the list of which is given on the third page of cover of the present issue of *The Journal*, affords variety, and will commend itself for use in many institutes and schools. The price is low, the music good.

CHARACTER must stand behind and back up everything—the sermon, the poem, the picture, the play, the far-reaching work of the teacher in his school-room. Not one of them is worth a straw without it.

THE system of "Merits and Questions Combined," published by ex-Supt. R. W. McKee, of Baldwin, Butler co., Pa., is so good a thing that it is to be hoped he will obtain the patent upon it for which application has been made. Some description of his "National Bank" will be found in our advertising columns. The 1600 merit slips —whose denominations, each printed in its own color, and all of the same size, are 1,

2, 3, 5, 10, 25, 50, and 100—are somewhat in imitation of the old postal currency of the United States. They are put up in a neat box of eight compartments, so as to be constantly in place, and are accompanied by a small pamphlet with explicit directions for use. We have spent some time in examining the questions on the backs of these slips, in pleasant surprise at the simplicity of the plan, and the excellent results which may be anticipated from its use by a judicious teacher in the average school-room. The character and variety of the questions are such as to set pupils to thinking and talking for themselves upon many subjects in and out of the ordinary course of their school work—thus diffusing much definite knowledge, as well as encouraging and gradually fixing the habit of intelligent inquiry.

THE article on the Michigan Agricultural College in this number of *The Journal* is by Prof. A. W. Potter, of the University of Michigan, who has given very careful attention to its preparation, desiring that nothing might be misrepresented by over-statement. It will be a revelation to many men in Pennsylvania who have reluctantly settled down to the conclusion—forced upon them by the unvarying record of failure in their own long experience with an Agricultural College—that such an institution cannot be successful. They will find in the organization and history of this great Michigan farm school, reason to revise their judgment, and ground on which to base the hope that the new President, if the man for the place, will be able to write a chapter in the history of the institution that Pennsylvanians will not be ashamed to place side by side with this from Michigan.

We had bright hopes for the College when Dr. Burrowes came to its head in 1869. He was a practical farmer, and a skilled man of affairs. His work, then already become historic, in connection with the Common School System of Pennsylvania, and, more recently, in organizing the System of Soldiers' Orphan Schools, gave promise of an equal measure of success with the Agricultural College. He put his hand upon the School with his accustomed energy and hopefulness, resolved that, if the years were granted him, the last important work of his life should also be no failure. But it was not so written in the decrees of Providence, and he fell at his post—a martyr to his devotion to the interests of the school that, under his vigorous management, seemed to have taken a new lease of life.

EXAMINATIONS.

NO more difficult task confronts the teacher than that of examination. As a test of attainment in any branch of study, it is necessary, and may be of great value, or almost worthless, depending upon the character and scholarship of the examiner. Especially is this true when the examiner has never taught the examined, and has had no knowledge of his power of thought, or general habit of study.

Questions may be so constructed, or topics so assigned, as to test the memory alone, bringing into notice merely the retention of facts and dates and verbal text-book answers,—a disorganized mass of material, neither digested nor assimilated, and of but little use, in such form, to any one. Even in this case, an examiner of broad scholarship, by a careful survey of the answers, can detect, with difficulty however, the mental grasp of the examined.

But again, questions may be so constructed or topics so assigned as to test the *knowledge* of the examined, and show how far his thought has grasped the truth of things in the given subject of study. The examined is thrown upon his own resources, not by puzzles to test his ingenuity, but by questions that demand a knowledge of principles upon his part, and the answers of which must come from his own inner powers of thinking. Even in this case, it is difficult to form a correct estimate of scholarship in very many branches of study, unless the examiner takes into critical survey the *whole* character of the answers given, the structure of the sentences, the English used, and that almost invisible thought power, which the examiner, if a scholar, recognizes by a sort of intellectual affinity or mental sympathy.

All examinations in our judgment, if to be relied upon, should be conducted by an examiner of broad, sound scholarship, such as will dictate a series of questions calculated to test scholarship, and which will detect in every answer given the more hidden element of self-possessed thinking, rather than the most ostentatious power of memory involved.

But in an examination to test the qualification of one desiring to become a teacher, how can an examiner assure himself of those *ethical* qualities, which, to say the least, are as necessary as are the *intellectual*? What list of questions can he form which will be of any service here? The most that he can do is to detect in the personal presence of the examined, as well as in the general tone of his answers, that self-humiliation and

reverence without which all moral life is dwarfed and blighted.

But fortunately our schools are all under the personal and continued inspection of our superintendents; and this, added to their examinations, should be sufficient to guard us against any serious immorality or great incompetence or waste of time in our educational work. Let us labor to keep among our examiners men of the broadest and soundest scholarship possible, and men whose manners and morals are above reproach.

THE SARATOGA MEETINGS.

THE meetings of the American Institute of Instruction, and of the several departments of the National Educational Association, held at Saratoga during the second and third weeks of July, attracted much attention. The foremost educational thought of the country was represented by those who are worthy to be leaders in the several departments of this, the grandest field for intelligent and useful effort that is to be found anywhere in America. We have space for but brief mention of the several departments, and distinct organizations, as we find their proceedings reported in the New York *Times:*

NATIONAL EDUCATIONAL ASSOCIATION.

Hon. Gustavus J. Orr, of Atlanta, Georgia, the President, delivered the inaugural address. He was a Southerner by birth, education, and sentiment, and he felt that he truly represented the bulk of the people, as well as their educated classes, when he said: "Let by-gones be by-gones; let the dead bury their dead, and let what has been stand." We will busy ourselves with the present, which is living. These are the sentiments of the best men of the South, and certainly the people of all sections of the country will heartily respond. The whole address was in this spirit, and was very cordially received.

Prof. Eli T. Tappan, of Kenyon College, of Gambier, Ohio, read a paper on "The University—Its Place and Work in the American System of Edacation," which subject had been assigned to Prof. W. Leroy Brown, of the Vanderbilt University at Nashville. He began by speaking of the misuse of the term "university." Many an institution was such in corporate name which ranked but little above grammar schools, and whose best work consisted in fitting students for college. The distinction between a college and a university does not consist in the power to confer degrees. The legislation in several States on this subject has been very poor; they have invested inferior schools with the power to confer all kinds of academic degrees, and the result is that academic degrees have become of little estimation. Men of the highest attainments prefer to drop now the meaningless titles of "Doctor" and "Professor." The unlearned scoff and superficial people talk profoundly about honorary degrees. All signs show that the amount of university work done in this country must increase greatly within the near future. Where the great schools will be, whether the advance will be in the old schools, that have done so much already, or whether newer institutions may surpass any that now exist, are not the all-important questions. The important thing is to recognize what must be the work of the university. If we can apprehend this definitely, we may help to hasten the work by removing some obstacles. This paper was discussed by Profs. J. A. Cooper, of Pennsylvania; J. W. Andrews, of the Marietta (Ohio) College, who eulogized the Johns Hopkins University, of Baltimore, as about the only institution in this country doing real university work; the Hon. Samuel Barnett, of Washington, Ga.; John Hancock, of Dayton, Ohio, and Prof. Folwell, of the Minnesota University, who said the old college course, so general 30 years ago, was gone, and all the colleges are adopting elective studies; the great want of the present day is to improve the high schools and seminaries; when they are improved, a part of the colleges will develop into the university.

Rev. E. T. Jeffers, President of Westminster College, Pennsylvania, read a paper on "Self-consciousness in Education." He said education is the development of all the powers and faculties of the human being. Self-consciousness is the power of direct and voluntary self-knowledge, First, this is a reliable power; faith in it is the basis of all knowledge; it is developed like other powers by exercise. Second, it is necessary to the educator in order that he may know his pupils and keep them from developing peculiarities rather than essential faculties. Third, it is developed by direct use of the phenomena of the soul itself by becoming acquainted with the thoughts of others—first, in literature; second, language; third, poetry; fourth, philosophical history; fifth, Proverbs of Solomon and the Epistle of Paul to the Romans; and sixth, the history of philosophy. A man will never fully know his own powers till he knows the great thinkers, from Socrates to Herbert Spencer.

The discussion of this paper occupied a large part of the succeeding session. Prof. G. Stanley Hall, of Harvard University, led in the discussion, and was followed by Dr. Hoose, of the Cortland Normal School, and Dr. W. T. Harris.

A paper by James T. Denton, State Superintendent of Public Instruction of Arkansas, on "The School Systems of the South," was passed, Mr. Denton not being present. A paper on country schools, by James P. Slade, Superintendent of Public Instruction of Illinois, was read. He recommended a careful supervision of the schools by State, county, and town authorities. A resolution introduced by J. W. Patterson, of New Hampshire, recommending national aid to education in the States on the

basis of illiteracy, was discussed by Mr. Daniels, of Virginia; John Hancock, of Ohio, and Mr. Painter, of Tennessee, and was adopted.

The evening session was devoted to a paper by Samuel Barnett, of Georgia, on the foundation of the principles of education by the State. The exact inquiry, he says, is not as to the importance of education, but the rightfulness of State aid to it. This has generally been conceded. Mr. Jefferson, the head and front of strict construction, devoted years of his life to this great cause. The principle has been incorporated in the Constitution of the United States and of the several States. An enlightened people is the best constitution of any State. The interest of society in educating is too profound to be left to chance. The State must at its peril see to it that the work of the school is done. Education directly promotes the leading object of government, and promotes the cheapest means to the same ends. It is the profoundest security of the State, the only solid bottom for its prosperity. Knowledge is as fundamental in its relations to government as to all things else. Maximum education makes minimum government possible, and secures maximum liberty. The school stands as a borderland between the State and savages. The incipient savages are in its very bounds, and there is a constant influx of them. The illiterate are not fully born; they are still in the shell.

At a joint session of the National Educational Association and the American Institute of Instruction, a resolution was introduced by President Buckham, of the Vermont University, strongly commending to the care of Congress the National Bureau of Education, and respectfully urging that the appropriation for it be not less than in former years. Copies of the resolution were ordered to be sent to the President, Speaker of the House, and Chairman of the Appropriation Committees of the Senate and House.

AMERICAN INSTITUTE.

The American Institute of Instruction heard a report on "Industrial Education" from a committee consisting of Francis A. Walker, M. C, Fernale, J. W. Patterson, M. H. Buckham, John S. Clark, and W. B. Weedon. They are of the opinion that there should be incorporated in the present schemes for education broader provisions for imparting to youth the elements of knowledge and skill required in the industrial arts, not alone for the development of these arts, but also as a part of a general system of public education, having for its object training for citizenship through the normal development of individual power. To this end they would recommend, first, the introduction into schools of broader provisions than now exist for the development of the sense of perception of pupils in regard to color, form, proportion, etc., by contact with models and with natural objects; second, the more general introduction into schools of simple physical and chemical experiment, for the purpose of acquainting pupils through observation with the elements of chemical and physical science and their application in the arts: third, the teaching of drawing, not as an accomplishment, but as a language for the graphic presentation of the facts of forms and of objects, for the representation of the appearance of objects, and also as a means of developing a taste in industrial design; fourth, the introduction into schools of instruction in the use of tools, not for application in any particular trade, but for developing skill of hand in the fundamental manipulations connected with the industrial arts, and also as a means of mental development. In view of the fact that much misconception exists in regard to giving instruction in the several features recommended, and the desirability of more information in regard to their practical introduction into schools, the committee suggest that a committee be appointed to examine still further into the general subject of industrial education and its relation to public education, and to report at the next annual meeting.

The report was followed by a long and exhaustive paper by John S. Clark, of the committee, who argued at great length in favor of broadening the area of education. He said that education, considered from several standpoints, may be regarded as a reproductive function in the social organism, and the educational needs of any period or people should be considered with reference to the social organism to be perpetuated and developed. The employments of the present time are productive and distributive. It is apparent that the productive and distributive employments are fundamental ones, and it follows that the practical equipment of the brain requires that the tongue and the hand should have such special training as to be able to convey whatever thought may be generated, Our prevailing education being practically out of joint, the remedy is to bring it into conformity with the social and individual needs of the time, so that it shall give us the good citizen through the normal development of industrial powers. In conclusion, it may be said that all the evidence so far accessible goes to show that it is not only possible to incorporate the elements of industrial education, including the use of tools, in our public instruction, but also that the incorporation of these features is absolutely needed for a complete mental development.

The discussion was mostly in the same vein as the paper, and was participated in by Mr. James McAllister, of Milwaukee; Larkin Dunton, of Boston; Prof. Woodward, of the St. Louis University; C. C. Coffin, of Boston; E. E. White and J. H. Smart, of Indiana.

Prof. G. Stanley Hall read an exhaustive essay on "Education of the Will." It was listened to with much attention, and its tenets were earnestly seconded by Prof. Greenough, of Rhode Island. The subject was not further discussed, owing to lack of time.

Prof. J. W. Churchill, of the Andover Seminary, read a paper on "Elocution." His aim was to place the neglected art of delivery on a firm basis of scientific principles, to show that the art strikes its roots into the deepest and richest soil of the man himself; that it is most

intricately interwoven into the sciences of psychology, physiology, physics, and especially æsthetics, of which it is a legitimate department. Larkin Dunton, Head Master of the Normal School, Boston, then read an essay in favor of oral instruction.

The following resolution, offered by T. W. Bicknell, was adopted:

Resolved, That as the proper training of the young comprehends a knowledge of the true principles of action, as well as correct modes of thought, it follows that the educational work should include those studies which develop a true manhood and protect the child from the evils which false and sinful theories and practices of life foster and confirm; it is, therefore, the duty of the school to inculcate temperance in all things, and especially abstinence from the use of all meats, drinks, and narcotics which tend to uudermine health, degrade the intellectual powers, lower the moral tone, and destroy the power and capacities of the child both for enjoyment and improvement, and unfit him for the duties and privileges of a true life.

Officers of the American Institute of Instruction were elected, as follows: President—George A. Walton, Massachusetts; Vice Presidents—Henry Barnard and sixty others: Treasurer—James W. Webster, Massachusetts; Assistant Treasurer—J. Milton Hall, Rhode Island; Secretary—Robert C. Metcalf, Massachusetts; Assistant Secretary—George E. Church, Rhode Island; Councilors—W. A. Mowry and eleven others.

NATIONAL COUNCIL OF EDUCATION.

The National Council of Education is composed of 51 members, from all parts of the country. It was formed at Chautauqua in 1880, and held its first annual meeting at Atlanta last year. The report read by the President, Mr. T. W. Bicknell, set forth the purposes of the Council, and included a summary of the papers prepared and recently read by Drs. E. E. White, W. T. Harris, W. A. Mowry, T. W. Andrews, John Hancock, C. O. Thompson, and John W. Dickinson. It discussed the value of the Council in its deliberative action, its wide range of view, its example as the true method of educational study, and its power in harmonizing conflicting views in a high generate action.

President W. W. Folwell, of the University of Minnesota, read a paper on "Secularization of Education." He said: "State universities are denounced as godless and infidel, and then their right to exist is impliedly denied. Addressing ourselves to this question, we observe that the State university is but a small corner of the field of discussion. Common schools are also equally godless, so are the normal schools, the public high schools, and the professional schools generally. We have to allow for the prodigious phenomenon. The application of the historical method shows that we have here simply a factor in that great historical movement, the separation of Church and State, which forms the marrow of modern history. In the eleventh century there was no secular power, and all schools were ecclesiastical. To-day all political power is secular or becoming so. Education has moved in a parallel track without concert, without co-operation. Nearly all schools in all civilized countries have become secular. Church and State, Church and school, are everywhere separate. The professor is no longer a teaching priest. Secularization of education has not been the work of any creed of atheists or infidels. It is not the offspring of a corrupt and decaying Christianity nor any relapse into barbarism. It is rather a part—an essential part and factor—in the purest, fairest Christian civilization the world has known. It is a movement coequal with the march of liberty, the extension of science, the efflorescence of literature and art. It cannot be diabolic in its origin. It is a great providential fact. To those who denounce and deny the great fact we have only to say, "Such is the fact, such the actual situation. What are you going to do about it?"

A paper on "The Prize System as an Incentive to College Students," by J. H. Carlisle, President of Wofford College, Spartansburg, S. C., was a sharp argument against the system of offering prizes as incentives to study. He distinguished prizes from rewards. All degrees given by colleges are rewards. They may be given too easily, but no one has proposed to remedy this by giving them as prizes to the few who stand the best examinations. You may offer a reward to all who are punctual, but do not offer a prize to the one who reaches chapel first in the morning. Give a reward, if you will, to every engineer who uniformly makes good time, but do not offer a prize to the fastest runner on the road. All the evils mentioned may not meet on every prize or in every institution, or in the experience of every teacher, but the tendencies are necessarily there. Can we not urge more earnestly and more successfully than we have yet done all the affluent, unfailing educative motives that may be drawn from a desire to promote the glory of the Creator and the relief of man's estate, while we appeal less to questionable motives snd rewards?

Moses T. Brown, Professor of Elocution in Tufts College, gave an exposition of "Delsarte's System of Expression."

The National Council of Education re-elected Thomas W. Bicknell, of Boston, President; E. E. White, of Indiana Vice-President, and C. C. Rounds, of Maine, Secretary.

INDUSTRIAL EDUCATION.

Prof. George T. Fairchild, of the Kansas Agricultural College, read a paper on "Dexterity Before Skill." The problem of industrial education has intricacies far beyond simple pro and con. Every year of experience makes its friends more inquisitive in the ways and means of doing most for those whom industrial colleges seek to reach. "And yet most of us," said he, "meet at every turn thoughtful, earnest men to whom the very elementary principles of such education, combining discipline of brains and hands at once, are unknown. Some still think the instruction of such a course wholly incident to hand training, and are surprised at any effort to teach or to learn out of

the routine of each day's task. Let farmers, mechanics, merchants even, and special artists, understand the principles underlying their arts and exercise their hands in the use of these by simple methods. Any loss of time in learning details is more than compensated for by the more perfect and practical grasp of relations that makes half the ability of any genuine expert. The mechanic will gain rather than lose strength by exercising in the simpler forms of dexterity used by the gardener and farmer, just as the iron-worker is a gainer by his manipulation of wood. The general curriculum of drill in art should precede every special training, and should treat all skill as the outgrowth of dexterity by adjusting training to advancement in manual just as in mental growth."

This was discussed by William Daniels, of Virginia, who gave a description of the industrial department of the Hampton School, and stated that those girls and boys who were engaged in manual labor showed increased activity in mental studies.

Prof. C. M. Woodward, of Washington University, St. Louis, read an essay on "The Function of the American Manual Training School." He discussed the subject at length, giving the results of his experience in the Washington University, with the course of study there. This paper was discussed by Prof. E. L. Youmans, of New York; L. H. Marvel, of Boston, and Mrs. Rickoff, of Yonkers.

Dr. E. E. White, President of Purdue University, Lafayette, Ind., read a paper on the "National Industrial College; Its History, Work, and Ethics." After showing the effects of the World's Fair held in London in 1857 in stimulating the industrial pursuits of the several nations, reference was made to other World's Fairs, and to the stimulus given to industrial education when the Congress of the United States, in 1862, gave public lands to States to endow colleges where should be taught agriculture and the mechanic arts. The importance of technical education for the farmer and artisan is not generally realized, and, as a consequence, the demand for such training is limited, though happily increasing. The difficulty of securing instructors trained in applied science has been one of the most serious obstacles which industrial colleges have encountered. Older technical schools were obliged to train their own instructors, which greatly retarded their progress. The imperative need of an industrial college is a central, vigorous, all-controlling industrial life and spirit. It mnst inculcate and secure habits of economy. The increasing extravagance of college life is one of the most serious obstacles which now impede the progress of higher education. The code of ethics of the industrial college must honor unswerving honesty, the basis of all industrial prosperity.

The following officers of the department were elected: President, C. M. Woodward, of St. Louis; Vice President, W. W. Folwell, of Minnesota; Secretary, S. R. Thompson, of Nebraska; Member of the Council, C. O. Thompson, of Connecticut.

ELEMENTARY SCHOOLS.

Hon. John M. Bloss, State Superintendent of Public Instruction of Indiana, President of this department, delivered the inaugural address. Referring to the importance of primary education, he said: "In the higher departments of education the work is strictly professional, and men and women whose attainments as educators are known, are applicants and find employment; but in the primary schools it is the inexperienced who are applicants—young men and women from the common school. They pass an examination in scholarship, but that is only one of the factors necessary to a teacher's success. One of the problems to be solved is how to discover the true teacher among those who have attained the necessary scholarship."

Dr. George P. Brown, President of the Indiana State Normal School, read a paper on "The Relation of Memory to Elementary Education." There are many kinds of memory, or rather many different memories, varying as the subjects to be remembered are different. In order that a thing may be remembered it must first be known. For the pupil to acquire knowledge there must be attention. To gain attention the teacher must excite a lively interest on the part of the pupils.

Miss Carrie B. Sharpe, of Fort Wayne, read a paper entitled "What, How, and How Better?" which was a criticism on various methods of education. One of her answers to "how better?" was to use newspapers in schools. She told of her way of questioning pupils regarding the daily news in the papers, and what points of current history they followed from various articles in the papers.

OTHER DEPARTMENTS.

In the department of Normal Schools the President, Dr. C. C. Rounds, of Maine, made a brief address upon the relation of normal schools to public education, and the needed improvement in their organizetion and equipment to enable them more effectively to accomplish their work. Dr. D. L. Kiele, State Superintendant of Public Instruction of Minnesota, read a paper on the "True Place of a Normal School in the Educational System," which was discussed by Prof. Morgan, of the Potsdam Normal School; Prof. Milne, of Geneseo: Prof. W. T. Harris, who gave an account of the normal schools in the South, and Prof. Glenn, of Georgia. The officers elected were E. A. Ware, of Georgia, President; E. C. Hewitt, of Illinois, Vice-President; and G. P. Beard, of Pennsylvania, Secretary.

The department of Superintendence elected the following officers: President—N. A. Calkins, of New York; Vice-President, H. S. Tarbell, of Indianapolis; Secretary, Henry S. Jones, of Erie, Penn.; Member of the Council of Education, Henry S. Jones.

The department of Higher Instruction elected the following officers: President, W. W. Folwell, of the University of Minnesota; Secretary, Prof. John H. Wight, of Dartmouth College; Member of the National Council, Aaron L. Chapin, President of Beloit College, Wisconsin.

OFFICIAL DEPARTMENT.

DEPARTMENT OF PUBLIC INSTRUCTION,
HARRISBURG, August, 1882.

PERMANENT CERTIFICATES GRANTED.

NO.	NAME.	COUNTY.
3207	John W. Hayman	Chester.
3208	L. W. Showers	Jefferson.
3209	Orlando F. Berger	Berks.
3210	Franklin H. Naftzinger	"
3211	Alice Shollenberger	"
3212	H. L. Yocum	"
3213	Agnes R. Costolo	Lancaster.
3214	Wm. H. Moyer	Lycoming.
3215	Thos. J. Fulton	Cameron.
3216	Maggie J. Blakely	Delaware.
3217	Ida Howard	"
3218	Mary A. Howard	"
3219	Lynie Johnson	"
3220	Rachel Roberts	"
3221	Annie R. Sager	"
3222	Laura B. Smith	"
3223	Eoline V. Stratton	"
3224	Rebecca N. Wilde	"
3225	Mime R. McCommon	"
3226	Florence Walker	Lackawanna.
3227	C. J. Dilcher	Northampton.
3228	Fred. S. Eilenberger	"
3229	E. A. Heimer	"
3230	Charles Kocher, jr	"
3231	Eugene W. Gruver	"
3232	E. H. Keiper	"
3233	Edwin Kilpatrick	"
3234	H. K. Mohr	"
3235	G. A. Berner	Schuylkill.
3236	Christie E. Brixius	"
3237	Annie M. Carter	"
3238	David W. Etien	"
3239	Clara B Gage	"
3240	John Linton	"
3241	Ed. McElroy	"
3242	D. L. Moll	"
3243	Wm. T. Butler	Wayne.
3244	Wm. H. Connolly	"
3245	Lester A. Freeman	"
3246	Rena Spencer	"
3247	Lucy C. Wright	Allegheny.
3248	Lizzie A. Thorpe	Warren.
3249	Vina Warner	"
3250	F. H. Leidig	Northampton.
3251	Alphenas Stofflet	"
3252	Louise Stern	Chester.
3253	James W. Raynor	Susquehanna.
3254	Lizzie H. Miller	Allegheny.
3255	Mrs. L. M. Gates	Armstrong.
3256	Nannie Lawther	"
3257	Emma D. Crawford	Butler.
3258	Sue A. Dick	"
3259	John Golden	"
3260	Jno. A. McCafferty	"
3261	Jno. B. Morrow	"
3262	J. C. Waldron	"
3263	Ida M. Weir	"
3264	A. B. Reynolds	Delaware.
3265	Harry S. McMichael	Lancaster.
3266	J. W. Gerberich	Lebanon.

ITEMS FROM REPORTS.

ARMSTRONG.—Supt. Stockdill: There are not so many applicants for schools in the county as there were last year. It is pleasing to be able to state that our teachers have made decided improvement during the year. We grant no certificates that count over twenty.

BERKS.—Supt. Keck: On the 27th the summer term of the Birdsboro schools ended with a public entertainment, which is very highly spoken of by the local papers.

BUTLER.—Supt. Murtland: The School Board of Harmony is about letting a contract for a two-story brick house. An architect has been employed, and, from such an intelligent Board, something excellent, with modern improvements, may be expected. Would it not be a good plan for the neighboring village of Zelienople to "go and do likewise?" An assistant principal will be elected in the Butler school in place of Prof. J. B. Mechling, resigned. The Witherspoon Normal Institute, under the excellent management of Profs. Bancroft and Tintsman, opened June 19th. About seventy students are in attendance. The Institute is in a flourishing condition and doing a good work.

BEDFORD.—Supt. Cessna: The South Woodbury Board is about to let the contract for the erection of a graded school-house in Pattonville. The Colerain Board is also building a house for a graded school. The select schools are about all closed; at a number of places they were well attended. Quite a number of such schools will open again two months hence. The school interests throughout the county are very promising.

CLEARFIELD.—Supt. McQuown: On June 3d Mr. John T. Liddle, late teacher of Dubois central high school, died after a brief illness. His remains were followed to their last resting-place by the pupils who had learned to love him on account of his fine qualities as an instructor. He was a skillful teacher, a thorough scholar, and a Christian gentleman, loved by all who knew him. New school-houses will be built at Winterburn, Kylertown and Glen Hope during the next three months, and the schools graded—a move in the right direction. Knox township School Board recently voted to advance the wages of their teachers five dollars per month. The condemned school building at Houtzdale is being torn down, and will be rebuilt immediately. A new contract has been drawn up and accepted.

FRANKLIN.—Supt. Disert: The most pleasing as well as the most interesting event of the month was the commencement exercises of the Chambersburg high schools. These exercises have been the means of educating the public in favor of the expense and effort necessary to sustain the high standing of the high school of this place. Too much credit cannot be afforded the directors of the borough for their efforts and sacrifices in behalf of the schools. The closing exercises of the Mercersburg, Waynesboro' and Bridgeport high schools were also of a most pleasing character, and reflect great credit upon all connected with them.

GREENE.—Supt. Nickeson: The County Institute will be held the last week in September. During this month I made a tour of the county, and had the

pleasure of meeting in session every school board except four. One object in this was to get the consent of the directors to hold the County Institute before the opening of the schools, and have the teachers paid for the time. All seemed very willing to do this, and, as a result, our teachers will be allowed the time. I made other suggestions to the directors, and in return received such as they thought proper to make. I think these meetings were beneficial, and will result in practical good to the schools of the county.

JUNIATA.—Supt. Smith: Our public schools are all closed, and many of our teachers are having excellent subscription schools, a number of which I have visited. The examination of the S. O. S. at McAlisterville was very satisfactory. Airy View Academy had a very large number of pupils during the session just closed. About fifty students in the different high schools and normal classes are preparing to teach this fall, and we will, in consequence, have a large supply of new material for our schools next year.

PERRY.—Supt. Flickinger: Several new schoolhouses are being erected in four districts of the county. Tuscarora township deserves credit for the new house it is building. The directors wisely concluded to erect a house containing a primary and a high school room, so that their schools can be graded. It is a move in the right direction.

UNION.—Supt. Burrows: The decennial anniversary of the girls' grammar school of Lewisburg was celebrated in a very pleasant and suitable manner, One hundred and ten graduates have gone out from the school since the foundation ten years ago. The directors of West Buffalo have just commenced the erection of another new house.

VENANGO.—Supt. Prather: During the month two institutes were held in the county, one at Mechanicsville and the other at Clintonville. Each continued in session for two days. Great interest was manifested on the part of both teachers and people.

WYOMING.—Supt. Prevost: The directors of Tuckhannock are going to improve their school building, to the extent of eight or ten thousand dollars, during the summer vacation. At Forkston a new building will be erected in place of the one burned down last December. In Mehoopany two school boards have been organized, and they are having considerable contention over the matter; the difficulty arises from disputed seats.

CHESTER CITY.—Supt. Foster: Our schools closed June 23d. The high school commencement exercises were held on the 20th. The graduating class numbered six. A class of thirty-two enters, making eighty in all for the opening next term. Two new rooms will probably be opened for primary scholars. The annual teachers' examination was held during the month.

SCRANTON.—Supt. Roney: The schools closed June 23d for the summer vacation. The high school commencement was held at the Academy of Music in the evening. Twenty-one students—eighteen male and three female—graduated. A new school building will be erected in the 6th ward.

SHENANDOAH.—Supt. Bartch: Our Board has elected all the teachers for the ensuing year except the principal and first assistant of the high school. Of the twenty-six teachers elected, twenty-three hold diplomas from State Normal Schools (of these twenty-one also hold diplonas from our high schools), two hold permanent certificates, and one has a professional certificate.

BOOK NOTICES.

SMALLER HISTORY OF THE UNITED STATES. *By Josiah W. Leeds. Pp. 305. Philadelphia: J. B. Lippincott & Co. 1882.*

There are two things we like about this book: first, it endeavors to give greater prominence to the civil and social history of the people, and to avoid as much as possible the glorification of war and military heroes. We have just seen in England an indication of the great change that has taken place in public opinion on the subject of war, in the general approval of the course of John Bright, who has very recently closed a long and truly honorable career in public life by resignation from office because he could not approve of aggressive warfare. The prejudice felt in this country against England has been largely fostered by boys' histories. We are now a great nation, with a place among the foremost powers of the world sufficiently recognized to quit crowing to show our importance, and we are old enough to know what our mission is among the nations. The second point is the acknowledgment of our unfair dealing with the Indian. For our indifference to the wrongs of the red man our common-school histories are largely responsible. With better teaching will come clearer ideas of duty, and the author deserves credit for beginning with the unprejudiced mind of the coming citizen. It is a good, healthy book, and ought to receive hearty recognition from those who have the training of the young. It is well supplied with sectional maps and illustrations of noteworthy buildings. One statement needs revision. In speaking of Johnson's Administration, Mr. Leeds says (page 204), "All of his cabinet officers resigned except Secretary Stanton." If we remember rightly, three withdrew and three remained to the close of the administration, and Stanton's was a case *sui generis*.

A MANUAL OF ELOCUTION AND READING: *Embracing the Principles and Practice of Elocution. By Edward Brooks, Ph. D., Principal of the State Normal School, Millersville, Pa. Philadelphia: Eldredge & Bro. Price, $1.50; to Teachers for Examination, $1.00.*

Dr. Brooks has succeeded in making a much more practical and convenient text-book for class instruction than that of Mitchell, which, as we infer from a remark in the preface, he started out to revise. Though Mitchell's was, in the main, an excellent work, and in particular showed fine literary taste; yet it was so much overburdened with technicalities that it presented quite a formidable appearance to the student. The province of a manual of elocution is to beget a love for the art; to present as few and simple rules as possible for a clear comprehension of the subject; and to illustrate these with appropriate selections. Of these points the first is the most important, and the author does not magnify elocution when he classes it among the *fine arts*. Like them its object is to give pleasure, and it has an advantage over music, painting, and sculpture, in its universal application. It gives pleasure to the unlearned as well as to the

learned; for it requires no previous culture in the hearer to appreciate. Some of us are born without a musical ear; some have but a limited sense of color or form; but none, except the deaf, are insensible to the divine harmony of speech. The selections from the wide range of English literature have been made with good taste and discriminating judgment. The book is handsomely issued—printed on calendered paper, and bound in green cloth—and will at once commend itself upon examination.

HOW TO TALK; OR PRIMARY LESSONS IN THE ENGLISH LANGUAGE. *By W. B. Powell, A. M., Supt. of Schools, Aurora, Illinois. Pp. 208. Philadelphia; Cowperthwait & Co. 1882.*

This good little book is intended for the primary pupil as soon as he can read and write easily. Its aim is to train the child in correct forms of speech before he has an opportunity to learn, or at least, before he becomes confirmed in habits of incorrect expression. But mere forms are not sufficient to make him talk well. It is necessary that he should learn to arrange his thoughts in a natural and methodical manner, and to do this requires practice in original expression. The book before us leads to this end easily and gradually, by means of attractive pictures, so arranged as to tell a story, and by exercises in turning simple poems into prose. Throughout the work there is constant drill on the parts of speech, the use of irregular verbs, and contracted forms, thus giving all of grammar needed below the high school grade. In its field, it is the best work that has recently been published. Mr. Powell's treatment of *shall* and *will*, their uses and distinction, is the simplest and clearest we have anywhere seen.

MODERN SCHOOL READERS. *In Five Numbers. Sheldon & Co., New York and Chicago. 1882.*

The first four books of this new series of readers lie before us. We have given considerable care and time to their examination, for there is no one branch of common school study which is capable of being made so complete an educator as reading. If more time were judiciously spent on reading and writing—not mere penmanship, but drill in expression with the pen—the result would be far more satisfactory to parent and pupil. This series in many respects realizes our ideal of good readers. They contain a great variety of matter, thus enabling the pupil the more readily to learn to read whatever comes before him; they present the phonic elements, one at a time, until they are all mastered; the script letters are introduced, one letter at a time, until the child can write them as fast as he can read them. In the first two numbers, as new words are brought in, they are printed in black-faced type. In the advanced readers, a commendable feature is the "Memory Gems," consisting of short extracts from the best poets. The beautiful illustrations and elegant binding will gratify the taste of the æsthetic, and the low price at which they are sold will suit the pocket of the economical.

THE TEACHERS' AND STUDENTS' LIBRARY. *By G. Dallas Lind, Prof. of Natural Science, Central Normal College, Danville, Ind. Pp. 522. Chicago: T. S. Denison. Price, $3.00.*

"The Teachers' and Students' Library" is a compendium of knowledge for the student, teacher, and general reader; embracing all the branches of education, with hints on the best modes of teaching them, and showing how to study. An excellent work from beginning to end! It is truly a teachers' library, for it contains the general principles of every science ordinarily taught in the common schools. Among the most commendable features are the hints on teaching, especially the subjects of reading and history; the chapter on School Law, and that on How to Study, which is recommended to be read first. The treatment of the subject of General Literature, though in the main satisfactory, is open to some criticism, especially in calling Dumas "the greatest novelist of his day," and in the relative position in rank assigned to Schiller and Goethe, which is hardly in accordance with the views of German critics. As specimens of the fullness of treatment the topics receive, we may mention that the subject of Physiology covers about fifty pages, and that of History more than one hundred. Mr. Denison, who prepared the latter subject, gives in brief a very clear and fair statement of the causes of the civil war. We can heartily commend the book as a very valuable addition to the list of such books as are specially designed for the teacher's use. It is cheap, useful, and issued in attractive style.

PRACTICAL LOGIC; OR THE ART OF THINKING. *A Text-book for Schools and Colleges. By D. S. Gregory, D. D., President of Lake Forest University. $1.15. Pp. 218. Philadelphia: Eldredge and Brother.*

What the author of Hudibras says of rhetoric—

> For all a rhetorician's rules
> Teach nothing but to name his tools,—

might, if it had suited his line as well, have been asserted of her sister logic, as generally taught. Before the time of Bacon, almost the only study pursued in the universities was logic; and in those days, by the constant practice of dialectics, the minds of the schoolmen were sharpened to a wonderful keenness. But, since the dawn of the new era of material development, the natural sciences have so encroached upon the space once allotted to logic, that they have almost driven it from the college curriculum. The time now devoted to its study is so pitiably brief that its mastery is impossible. It is no wonder, then, as Dr. Gregory confesses, that he, "in common with other educators, has felt that, as ordinarily taught, this science does very little towards training to think." To remedy this evil, the text-book before us aims to make logical praxis the prominent feature in its presentation.

ANIMAL ANALYSIS. *For Use in Schools and Colleges. By B. W. Evermann. Chicago, Jansen, McClurg & Co. 1882.*

A set of blank forms containing headings for mammals, birds, reptiles, fishes, etc., neatly bound in flexible covers, For the student of zoölogy, this presents a very convenient means of recording the results of his examination of the members of the animal kingdom. If properly used in classes, it may be made an efficient aid in stimulating the zeal of pupils.

ECLECTIC SHORT-HAND. *Writing by Principles instead of Arbitrary Signs. By J. Geo. Cross, A. M. Pp. 228. Chicago: S. C. Griggs & Co.*

Short-hand writing has become quite an extensive employment in this country since the late war. The eager desire "to hear and to tell some new thing," which characterizes the American of to-day like the Athenian of old, requires almost an army of reporters to satisfy it. To keep pace with a rapid speaker requires a speed of from 150 to 200 words per miuute. This rate no ordinary writer can attain by long-hand; hence the necessity of some mode of abbreviating the labor, Its use is as old as Cicero's time, for we read of his freedman's practicing it. The systems in use at the present day, all of which represent the phonic ele-

ments of the language by the simplest characters, owe their origin to Isaac Pitman, an Englishman, who published his work in 1837. Since that time, many improvements have been made, though most writers on phonography, following Pitman, make the circle the basis of the system; Mr. Cross, however, has adopted the flattened ellipse, as giving a movement more closely resembling that of long-hand, and hence more easily acquired by an ordinary writer. All the letters are represented by oblique and horizontal lines, dispensing with the vertical in common use. The possible objection is that greater divergence af angle in the character is likely to secure greater legibility, which is the strong argument for the Pitman system. We are much pleased with the Eclectic System. It can be learned in a short time; but, of course, to attain great speed demands long and constant practice.

ETYMOLOGY OF LATIN AND GREEK. *By Charles S. Halsey, A. M. Pp. 252. Boston: Ginn, Heath & Co.*

This compact little manual presents very clearly the views of the new school of etymologists, in a form not obtainable elsewhere. The treasures of the great German storehouse of philology have been drawn upon and so assimilated to English modes of thought as to produce not only an excellent class-book, but a very interesting volume for the intelligent reader. The only objection that struck us in our examination was that the *line* arrangement does not afford so convenient a mode of finding particular derivatives as the *column* would; but when we reflect that this would swell the book to a much greater bulk, we are content to accept it as it is given.

FIRST STUDIES IN DRAWING. *By Benjamin H. Coe, Teacher of Drawing. Pp. 65. John Wiley & Sons, New York.*

This neat little volume, containing elementary exercises, drawing from objects, animals and rustic figures, is complete in fifty-four studies. It has been before the public for many years, and has always been well received. Though to great extent superseded in schools by works on mechanical drawing, it still has a field of its own, and as a first book in artistic drawing, will afford relief to the young mind weary of geometrical figures. It is handsomely bound in red cloth, and would make a very acceptable present to a bright child.

MCNALLY'S SYSTEM OF GEOGRAPHY: *For Schools, Academies and Seminaries. Revised by James Monteith and S. T. Frost. Pp. 141. A. S. Barnes & Co., New York and Chicago.*

The new edition of this Geography proposes to make that subject interesting by combining it with general literature. The incidents of discovery and travel, the events of history, and local scenes from poetry, are summoned to lend a charm to the dry catalogue of names, and throw the drapery of imagination around the bare skeleton of fact. This, which is called "Geography Outside of Text-Books," is embodied in foot-notes, containing the liveliest facts of Commercial, Historical, Political, and Physical Geography, with abundant reference to general literature. The idea is a good one, but an occasional error of statement occurs, as witness—"The Blue Grass Region" is placed in western Kentucky instead of the eastern and central parts; Weems, to whose Life of Washington reference is made on page 31, is transformed into the German Weims; in noting the German wars of 1866 and 1871, an obscurity in statement leads to the inference that it was after the former, and not the latter war, that the King of Prussia became Emperor of Germany. We call attention to these points not in the spirit of fault-finding, but with regret that so happy an idea should be somewhat marred in execution. The commercial map of the United States, showing the railroad routes divided into distances made every day in traveling from place to place, assuming New York and Chicago as starting points, is a useful feature of the book. The maps are good, and the statistics of population, etc., are brought down to the latest date.

COMMON SCHOOL SPELLER. *Adapted to Written Lessons, and accompanied by an Exercise Book. By Calvin Patterson. Pp. 160. New Edition. Sheldon & Co., New York and Chicago.*

The publishers have issued a new edition of this popular speller, which has been before the public for eight years, and have greatly improved its general appearance. It is divided into seven parts, of which Part IV., containing Rules for Spelling, and Part VI., containing Synonyms distinguished by definitions, and the proper use of each illustrated by sentences, are especially valuable on account of their satisfactory treatment.

A NEW METHOD OF DOUBLE ENTRY BOOK-KEEPING. *By Geo. E. Seymour, A. M., Instructor in the St. Louis High School. Pp. 128. Am. School Book Co., St. Louis, Mo. 1882.*

There is probably no branch of public school study from which more is expected and less obtained than book-keeping. We are inclined to think that beyond the simple principles of Single Entry, this subject has little place in the public school system. It is not merely that its principles are too difficult for the young, for by clear statement, as Mr. Seymour shows, these may be made quite intelligible; but like the law, "it is a jealous mistress," and requires so much time for practice and a devotion to its details so complete, that, amid the variety and number of ordinary school studies, it is impossible to give it. The work of Mr. Seymour seems a very clear presentation of the principles of Book-keeping by Double Entry, and for such schools and individuals as have time to devote to this science, it will repay careful study.

THE August ATLANTIC MONTHLY has two features which will commend it to general attention, namely, a fine steel portrait of Mr. Emerson, which is remarkably satisfactory, and which is accompanied by an admirable article by W. T. Harris, of Concord, Mass.; and a Supplement containing a full account of the Garden Party to Harriet Beecher Stowe on the anniversary of her Seventieth Birthday, with the addresses, poems, and letters. In addition to this, the number contains an entertaining travel sketch "Across Africa," by Charles Dudley Warner; another installment of the "Studies in the South;" an entertaining short story, "Some Account of Thomas Tucker," by Rose Terry Cooke; additional chapters of the varied serial stories, "Two on a Tower," by Thomas Hardy, "Dr. Zay," by Miss Phelps, and "The House of a Merchant Prince," by William Henry Bishop. Dr. Holmes contributes a characteristic, delightful poem, entitled "At the Summit," *apropos* of Mrs. Stowe's birthday. There are other essays and poems, reviews of the most important recent books, and a fine variety in the Contributors' Club. Altogether, the number is one that every lover of the *Atlantic* will especially value. But the best feature of it is the Supplement, which gives an account of such a tribute to the value and recognized influence of the literary work of a woman, as finds its parallel nowhere in all the past history of the world.

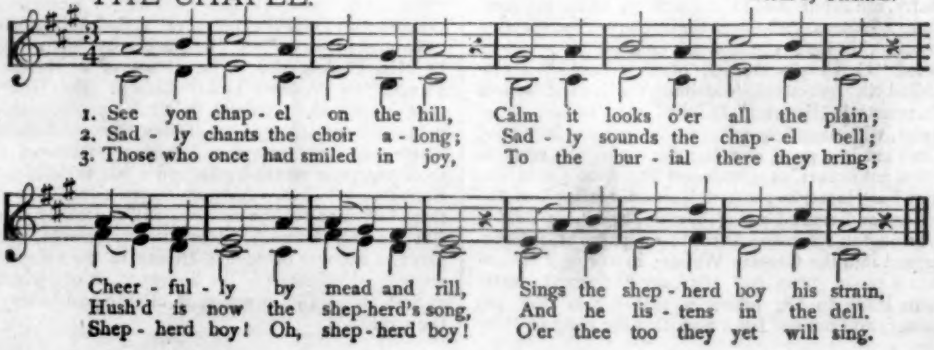
HOME'S NOT MERELY FOUR SQUARE WALLS.

CHAS. SWAIN.
AIR FROM ROSSINI.

1. Home's not mere - ly four square walls, Though with pic - tures hung and gild - ed;
2. Home's not mere - ly roof and room, Needs it some-thing to en - dear it;
Home is where af - fec - tion calls—Filled with shrines the heart hath build - ed.
Home is where the heart can bloom; Where there's some kind lip to cheer it.
Home!—go, watch the faith - ful dove, Sail - ing 'neath the heaven a - boye us;
What is home with none to meet? None to wel - come—none to greet us?
Home is where there's one to love, Home is where there's one to love us.
Home is sweet—and on - ly sweet—Where there's one we love to meet us.
Home is where there's one to love, Home is where there's one to love us.
Home is sweet—and on - ly sweet—Where there's one we love, to meet us.

THE CHAPEL.

Words by UHLAND.


1. See yon chap - el on the hill, Calm it looks o'er all the plain;
2. Sad - ly chants the choir a - long; Sad - ly sounds the chap - el bell;
3. Those who once had smiled in joy, To the bur - ial there they bring;
Cheer - ful - ly by mead and rill, Sings the shep - herd boy his strain,
Hush'd is now the shep-herd's song, And he lis - tens in the dell.
Shep - herd boy! Oh, shep - herd boy! O'er thee too they yet will sing.